YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME

IMPACT OF CLINICAL ORAL HEALTH STATUS ON ORAL HEALTH RELATED QUALITY OF LIFE AMONG INSTITUTIONALIZED ELDERLIES

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JUNE, 2025

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A thesis submitted as a partial fulfillment towards the requirement for the degree of Master of Public Administration (MPA).

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YANGON UNIVERSITY OF ECONOMICS
DEPARTMENT OF APPLIED ECONOMICS
MASTER OF PUBLIC ADMINISTRATION PROGRAMME

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ABSTRACT

A descriptive cross-sectional study, conducted in February 2025, to assess the impact of clinical oral health status on oral health-related quality of life (OHRQoL) among institutionalized elderlies aged ≥65 years in Yangon. Participants were recruited from Catholic Home for Aged (Mingalar Taung Nyunt) and Shwe Than Lwin Home for Aged (Dagon Seikkan). Clinical oral health status was evaluated using a modified WHO Oral Health Assessment Form (2013), measuring Functional Teeth (FT) and Functional Tooth Units (FTUs). OHRQoL was assessed using the 12-item Geriatric Oral Health Assessment Index (GOHAI), where lower scores indicate better OHRQoL. The study found that respondents at Catholic Home had better OHRQoL (mean GOHAI = 13.52) than those at Shwe Than Lwin Home (mean GOHAI = 24.80), even though Catholic Home respondents had slightly fewer FT (17.46 vs. 21.91). Crucially, Catholic Home respondents had more FTUs (16.12 vs. 8.66). This shows that having more teeth, and especially more usable chewing pairs (FTUs), is strongly linked to better daily life satisfaction related to oral health (lower GOHAI scores). The study confirmed FT and FTUs significantly impact OHRQoL in Myanmar's institutionalized elderly. More research is needed to confirm these tools and explore dental care use.

ACKNOWLEDGEMENTS

First and foremost, I express my deepest gratitude to the Master of Public Administration Programme Committee at Yangon University of Economics for giving me the opportunity to undertake this thesis.

I sincerely thank Professor Dr. Tin Tin Htwe, Rector of Yangon University of Economics, for her kind encouragement and support, crucial for developing and submitting the thesis on time.

My profound thanks go to Professor Dr. Cho Cho Thein, Pro-Rector of Yangon University of Economics, for her invaluable guidance throughout this entire study.

I offer my warm and sincere appreciation to Professor Dr. Su Su Myat, Professor and Head of the Department of Applied Economics and Programme Director of the Master of Public Administration Programme at Yangon University of Economics. I thank her for her dedicated guidance essential for completing this thesis. I am deeply thankful to Dr. Thet Mon Soe, Lecturer, Department of Applied Economics, Yangon University of Economics, for examining and helpful suggestion for my research.

This thesis would not have been possible without the consistent encouragement of my supervisor, Professor Dr. Daw Tin Tin Wai, Pro-Rector (International Relations) at Yangon University of Economics. I extend my deepest gratitude to her for her constant, valuable supervision, inspiring guidance, constructive suggestions, and unwavering interest from the inception of this work to its completion.

My special gratitude is extended to Dr. Daw San San Aye, Director General, Daw Lei Yin Win, Daw Wai Wai Phyoe Hlaing and Daw Khine Su Lwin, from the Department of Social Welfare and staffs from Catholic Home-for-Aged and Shwe Than Lwin Home-for-Aged, and the elderly respondents for their valuable support.

Moreover, I give my loving thanks to my wife, Daw Win Win Yee, for her support and understanding throughout my thesis preparation. I express sincere gratitude to my colleagues Dr. Min Thant, Dr. Pyae Phyo Kyaw, Dr. Chaw Su Su Lin, and Dr. Ye Thu Zar for their essential help and cooperation during thesis period. Finally, I offer deep thanks to everyone who support to my thesis in various ways.

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LIST OF ABBREVIATIONS

DMF-T	Decayed Missing Filled Teeth
D-T	Decayed Teeth
F-T	Filled Teeth
FT	Functional Teeth
FTUs	Functional Teeth Units
GOHAI	Geriatric Oral Health Assessment Index
M-T	Missing Teeth
OHIP	Oral Health Impact Profile
OHRQoL	Oral Health-Related Quality of Life
QoL	Quality of life

CHAPTER I
INTRODUCTION

1.1 Rationale of the Study

The aging population in Myanmar, particularly in urban centers like Yangon, presents significant public health challenges. According to the 2021 census, around 7.5% of Myanmar's population is aged 60 years and older, a figure anticipated to increase in the forthcoming years (World Bank). This demographic transition requires a thorough analysis of the health state and wellbeing of older adults, especially those residing in institutional environments. Oral health significantly impacts on the overall quality of life (QoL), particularly for the elderly.

Oral health includes the condition of the teeth, gums, and the overall oral-facial system, which is vital for several everyday activities such as eating, speaking, and social interactions (Wang, Guo *et al*., 2020). In institutionalized older populations, inadequate oral health can substantially impair quality of life, resulting in challenges related to diet, communication, and social interaction (Kossioni A.E., 2016). Moreover, an increasing amount of research suggests that dental health is intricately connected to systemic health issues, including diabetes and cardiovascular disorders, which are common in older persons (Baffour-Awuah, N., 2017). Consequently, comprehending the influence of clinical oral health status on oral health-related quality of life (OHRQoL) among institutionalized elderly individuals in Yangon is essential for improving personal health outcomes and guiding public health policies designed to enhance care and support for this at-risk population.

Studies have repeatedly demonstrated that the oral health of older adults is frequently impaired owing to factors such as limited access to dental treatment, comorbidities, and the side effects of drugs that may result in xerostomia and other oral health complications (Kumar, S. *et al*., 2021). Elders in institutional settings may encounter further difficulties, including restricted mobility, cognitive deterioration, and insufficient oral hygiene assistance, which might aggravate pre-existing oral health issues (Sharma, A. *et al*., 2020). These concerns adversely impact physical

health and may also result in psychological discomfort, social isolation, and a reduced quality of life.

To evaluate the Oral Health-Related Quality of Life (OHRQoL) in institutionalized older populations, many validated tools have been created, including the Geriatric Oral Health Assessment Index (GOHAI) and the Oral Health Impact Profile (OHIP) established by Atchison and Dolan (1990). These instruments allow researchers to measure the influence of dental health on everyday activities and overall welfare (Atchison, K.A., 1990). Research by (T, D, N, N, & L, 2019) indicated that inadequate oral health was substantially associated with diminished OHRQoL scores among older individuals in care facilities, underscoring the necessity for thorough oral health evaluations and treatments in these environments.

Research on the oral health status of the elderly in Myanmar is scarce, especially for institutionalized populations. Several research have indicated elevated prevalence rates of dental caries, periodontal disorders, and edentulism among older persons in the nation (Aung, S. *et al.*, 2016). The precise influence of these clinical disorders on OHRQoL remains little investigated. This deficiency in the literature highlights the necessity for focused research that examines both the incidence of oral health problems and their impact on the quality of life of institutionalized elderly individuals.

Executing this study in Yangon is especially pertinent due to the cultural and social landscape of Myanmar. The nation's healthcare system encounters several obstacles, such as insufficient access to dental treatment, constrained resources, and a widespread lack of understanding regarding the significance of oral health (WHO, 2018). Elderly folks in institutions frequently depend on the facilities' ability to deliver sufficient oral health care. Consequently, comprehending the correlation between clinical oral health status and Oral Health-Related Quality of Life (OHRQoL) might guide interventions aimed at enhancing oral health services and support systems for the elderly at these institutions.

Furthermore, the results of this study may possess wider ramifications for public health policy and practice in Myanmar. This research underscores the essential connection between dental health and quality of life, advocating for more investment in oral health initiatives for the elderly, especially within institutional environments. This may encompass carer training, enhancing access to dental services, and fostering awareness regarding the significance of oral hygiene among staff and residents. This

investigation is motivated by the pressing necessity to comprehend the influence of clinical oral health conditions on the quality of life of institutionalized elderly individuals in Yangon. This research is crucial for formulating effective interventions and policies that improve oral health and general wellness, considering the growing geriatric population and the distinct problems it encounters. This study seeks to bridge the existing gap in literature, therefore providing useful insights that may enhance the lives of society's most vulnerable individuals.

1.2 Objectives of the Study

This study aims:

1. To assess the clinical oral health behaviors and socio-demographic profiles of elderly respondents.
2. To assess the comparison of clinical oral health status (Dental caries status, FT and FTUs status) between Two Home for Aged.
3. To analyze the impact of clinical oral health status and oral health related quality of life (OHRQoL) among elderly respondents.

1.3 Methods of Study

Design of study employs a cross-sectional design to assess the impact of clinical oral health status on oral health-related quality of life (OHRQoL) among institutionalized elderlies in Yangon. The design is appropriate for identifying associations between clinical oral health parameters and OHRQoL at a single point in time.

The target population includes elderly individuals aged 65 years and above residing in selected institutional care facilities in Yangon. A purposive sampling method is used to ensure representation across institutions. The sample size is determined using standard statistical formulas, considering the prevalence of oral health issues among the elderly and a margin of error of 5%.

Clinical Oral Health Assessment are conducted by trained dental professionals using standardized diagnostic criteria for dental caries, remaining teeth, oral health behavior (oral hygiene and oral habit), functional teeth (FT) and functional teeth units (FTUs).

OHRQoL is assessed using a validated tool, such as the Geriatric Oral Health Assessment Index (GOHAI), which captured the physical, psychological, and social

dimensions of oral health. Structured interviews collect information on age, gender, duration of institutionalization, and other relevant variables. Descriptive statistics summarize the socio-demographic and clinical data. Inferential statistical tests, such as chi-square tests and multivariate regression analysis, are applied to examine the relationships between oral health parameters and OHRQoL.

Ethical approval is obtained from a recognized institutional review board. Written informed consent is obtained from all participants, ensuring confidentiality and voluntary participation.

1.4 Scope and Limitations of the Study

The primary aim of this study will be to assess the clinical oral health status (the number of remaining teeth or functional teeth units – FTUs) and subsequently evaluate the association between the impact of clinical oral health status (remaining teeth or functional teeth (FT) or functional teeth units (FTUs) on OHRQoL among the elderly.

Given the increasing proportion of older adults in Myanmar's population, particularly those in institutionalized settings who will be at a higher risk of poor oral health due to factors such as limited assesses to dental care, declining physical health, and dependence on caregivers for oral hygiene, this research will integrate clinical assessments with self-reported OHRQoL data. This approach will provide a comprehensive understanding of the interplay between objective oral health measures and subjective well-being.

The findings intended to inform healthcare policymakers and dental practitioners, enabling them to design interventions that will improve oral health and overall quality of life for institutionalized elderly populations.

Several limitations could influence the study, as it will focus on institutionalized elderly individuals in Yangon and may not represent non-institutionalized elders or those in rural areas with different healthcare access.

Self-reported measures of OHRQoL may be influenced by personal perceptions and emotional factors, which could reduce objectivity (Cohen, *et al*., 2009). Additionally, the limited availability of advanced diagnostic tools may restrict the comprehensiveness of clinical assessments.

1.5 Organization of the Study

This study is organized into five chapters. Chapter one serves as the introduction, outlining the rationale for the study, the objectives, the methods employed, the scope and limitations, and the overall organization of the study. Chapter two provides a literature review relevant to the study. Chapter three will present on overview of institutionalized elderly from two homes for the aged in Yangon. Chapter four is the analysis of the collected survey data and the current oral health care situations in Myanmar. Finally, chapter five concludes the findings and suggestions for future oral health care plans.

CHAPTER II
LITERATURE REVIEW

2.1 Role and Importance of Oral Health and Oral Health Care

Oral health is characterized as "a condition of the mouth and related structures in which disease is controlled, future disease is prevented, occlusion is adequate for mastication, and the teeth meet social acceptability standards."(Yew-Dwyer, M., 1993) This definition addresses functional and social issues, striving to bridge the gap between medical and socio-environmental health paradigms; however, it predominantly adheres to the former, equating health with the absence of disease and concentrating primarily on the mouth rather than the individual (Locker , 1997) . Dolan (1993) has defined oral health in alignment with modern perspectives as "a comfortable and functional dentition that enables individuals to fulfil their desired social roles." This concept places comfort, function, and social duties within health and emphasizes a person-centered rather than mouth-centered approach (Jokovic & Locker, 1997).

The World Health Organization (WHO) created the notion of oral health, which has been used interchangeably and simultaneously with dental health (Engel, 1977). Oral and dental health are sometimes used interchangeably, although oral health goes beyond mouth illness. It includes optimal functional, social, and psychological well-being in a socio-environmental or holistic framework (Locker, D., 1997). Oral health is integral to overall health and enhances physical, mental, and social well-being via effective oral functions tailored to individual circumstances and the absence of disease" (Hugoson *et al.*, 2003). This aligns with Dolan's (1993) description of health as a state of pleasant and effective dentition that enables individuals to fulfil their preferred social responsibilities. Locker (1997) encapsulated his perspective as follows: "In discussions regarding oral health, our emphasis is not solely on the oral cavity but on the individual and how oral diseases, disorders, and conditions—whether localized to the oral cavity or associated with other medical issues—endanger or influence health, wellbeing, and quality of life." This suggests

that oral illness impacts oral health through its functional, psychological, and social repercussions for the individual. Consequently, oral health may differ, despite the potential existence of oral illness. Individuals may report satisfactory oral health while experiencing tooth loss, as evidenced by many studies (Unell *et al*., 1998; Ekback *et al*., 2009).

The oral health assessment includes self-rates (excellent, very good, good, fair, poor), five oral health status indices, a six-item chewing capacity index, a three-item clarity of speech index, a nine-item oral pain inventory, a 13-item inventory of additional oral symptoms, and a 15-item psychosocial impact scale. The latter addressed nutrition, communication, relationships, and daily living. These metrics facilitated the exploration of theoretically separate components of oral health (Locker, 1988).

Essential oral health care treatments for the elderly encompass daily oral hygiene maintenance, nutrition, hydration, and dental treatment. The home-based services system for the elderly in Japan is anticipated to improve by acquiring more information on oral health care and by providing sufficient oral health care to this demographic (Kaneko *et al*., 1993; Strayer & Sasaki, 1994).

Tooth loss is linked to functional and psychological consequences in older people, and it is anticipated that the elderly will preserve a higher number of natural teeth in the future due to the efforts of dentists and dental care. Moreover, it has long been established that tooth loss is not attributable to ageing, but rather to illness. Consequently, dentists ought to enhance patients' overall wellness by overseeing oral hygiene and imparting sufficient information and proficient guidance (Mattsson *et al*., 1990). In Western nations, the elderly had a greater loss of teeth due to periodontal disease than from dental caries. Recent studies indicate that a significant cause of tooth loss in the elderly population is caries (Mattsson *et al*., 1990). Root caries may increasingly become a significant issue due to the heightened exposure of root surfaces with advancing age. Numerous studies indicate that coronal and root caries commonly manifest in the elderly population. Multiple criteria are inherently considered in the decision to remove a tooth. While oral variables are the principal reasons, socio-economic factors may affect the decision in several ways (Slade *et al*., 1997). Multiple studies have been undertaken to assess the oral health and treatment requirements of the elderly, predominantly indicating inadequate dental health condition (Slade & Spencer, 1994). Significant advancements have been made in the

prevention and treatment of edentulism among the elderly, resulting in a notable decrease during the past decade. The dental care provided to institutionalized elderly individuals frequently focuses solely on emergency interventions, neglecting efforts to preserve teeth through restoration procedures and routine oral hygiene. Current information is required to arrange oral care for institutionalized old individuals. Since 1991, only one nationwide survey (Vucicevic *et al.*, 2002) has evaluated the prevalence of edentulousness, dental caries, and tooth loss among the elderly institutionalized population in Southern Croatia, specifically in the capital city of Zagreb.

2.1.1 Role and Importance of Oral Health Care

Dental hygiene is critical to overall health, reducing disease burden, enhancing quality of life, and cutting healthcare expenses.

Oral health care includes preventative, diagnostic, and therapeutic measures to preserve teeth, gums, and the oral cavity. In preventing oral disorders, the most common non-communicable diseases worldwide, it is crucial. Regular brushing, flossing, fluoride usage, and dental checkups dramatically lower the incidence of dental caries, periodontal disease, and tooth loss (Petersen *et al.*, 2005). Oral care also maintains nutrition and speech, and avoids pain and infections that can worsen systemic health. Poor dental hygiene is connected to systemic diseases including diabetes, cardiovascular disease, and respiratory infections, making oral hygiene an important preventative intervention (Tonetti *et al.*, 2017). Oral health treatment also boosts mental and social wellbeing. Due to discomfort, poor smell, or missing teeth, oral health disorders can cause psychological anguish, low self-esteem, and social disengagement (Locker, 2004). Therefore, access to preventive care, dental education, and early intervention not only improves oral health but also enhances self-confidence and social participation. Furthermore, oral health care significantly reduces the economic burden on individuals and healthcare systems. Treating advanced dental diseases is expensive and often unaffordable in low-resource settings. In contrast, preventive care is more cost-effective and leads to better long-term outcomes (Listl *et al.*, 2015). National health strategies should thus prioritize accessible and affordable oral health services, community education, and school-based preventive programs. In summary, oral health care is not a luxury but a fundamental aspect of holistic well-being. It aids in preventing both oral and systemic diseases, supports mental and

emotional health, and contributes to economic efficiency in healthcare. Enhancing awareness, access, and affordability of oral health services should be a global health priority.

2.2 Common Effects by Poor Oral Health Care

Poor oral health care can lead to a wide range of negative effects, including oral diseases, systemic health complications, psychological distress, and economic burdens, emphasizing the need for preventive dental practices and public health awareness.

Neglecting oral health can lead to dental cavities, gingivitis, and periodontitis, some of the most frequent health disorders worldwide. Untreated, these disorders can cause discomfort, tooth loss, and infections that impair chewing and speech (Petersen *et al*., 2005). Gum disease inflammation is linked to systemic health concerns. Scientific evidence links periodontal disease to chronic illnesses including diabetes, cardiovascular disease, respiratory infections, and poor pregnancy outcomes (Tonetti *et al*., 2017). For example, individuals with diabetes may experience worsened glycemic control due to untreated periodontal inflammation, creating a vicious cycle that deteriorates both oral and general health.

Poor dental health also affects mental and social wellbeing. Pain, foul breath, and missing or damaged teeth can cause shame, low self-esteem, and social avoidance, hurting mental health and quality of life (Locker, 2004). Due to oral pain or apparent dental abnormalities, children and adolescents may struggle in school and socially, while adults may be stigmatized or disadvantaged. Poor oral health care costs money and harms health and society. The cost of treating advanced dental diseases is high, and individuals in low-income settings often delay seeking care until emergencies arise, leading to more complex and costly interventions (Listl *et al*., 2015). This burden extends to healthcare systems, which must allocate substantial resources to manage preventable conditions. In essence, the common effects of poor oral health care go far beyond the mouth. They contribute to systemic disease, emotional distress, and economic hardship, highlighting the critical importance of maintaining good oral hygiene and ensuring access to preventive dental services. Addressing these effects through education, early intervention, and public health initiatives is essential for promoting holistic health and well-being.

2.2.1 Common Oral Health Problems

As individuals age, they experience various oral health challenges, including age-related structural changes, dental caries, periodontal diseases, and tooth loss or edentulism. These issues significantly impact quality of life and require targeted care strategies.

(a) Age-Related Changes in Oral Health

Aging alters the appearance and function of oral structures. Teeth often yellow or darken due to thinning enamel and underlying dentin changes, compounded by abrasion and attrition from long-term use. Reduced blood supply to teeth diminishes sensitivity, delaying detection of decay or trauma. The cementum, covering tooth roots, thickens with age, becoming more vulnerable to acids, sugars, and tobacco. Oral mucosa undergoes thinning and dryness due to hormonal or nutritional deficiencies, while the periodontal ligament weakens, increasing susceptibility to gum recession. Though gingival recession is common in older adults, it is not an inevitable aging consequence but exposes roots to caries.

(b) Impact of Remaining Teeth in Elderly

The absence of one or more teeth can significantly impact an individual's oral health and quality of life connected to oral health (Jain *et al*., 2012). Tada, A (Tada *et al*., 2003) has demonstrated that senior individuals with more than 20 teeth had greater physical activity (participation in sports, travel) compared to those with fewer than 19 teeth. This research indicates that the quantity of surviving teeth correlates with physical activity in older individuals (Akifusa, *et al*., 2005). The effects of tooth loss and edentulism on overall health must be assessed by evaluating the principal components of health: physical symptoms and functional ability, social functioning, and subjective well-being. This indicates that precisely defined demographic endpoints can elucidate the worldwide impact of this illness.

(c) Dental Caries

Dental caries remains prevalent among the elderly, affecting 82% of those aged 65–74. Root caries is particularly concerning due to gum recession and periodontal disease, with 64% of those over 80 affected. Risk factors include

cariogenic bacteria (e.g., *Streptococcus mutans*), reduced saliva flow (xerostomia) from medications, and poor dietary habits. Fluoride treatments, improved hygiene, and minimally invasive restorative techniques help manage caries, emphasizing tooth preservation over extraction. Studies highlight high crown caries rates (22%) in dentate elderly, underscoring the need for preventive care to avoid prostheses and maintain natural dentition.

(d) Periodontal Diseases

Periodontal disease, affecting 41% of those over 65, involves inflammation of tooth-supporting structures, leading to bone loss and tooth mobility. Gingivitis, marked by bleeding gums, progresses to periodontitis if untreated, causing pocket formation, loosening teeth, and eventual loss. Aging exacerbates cumulative damage, with severe periodontitis linked to systemic conditions like diabetes and cardiovascular disease. Treatment includes scaling, root planning, antibiotics, and consistent hygiene. Institutionalized elders often exhibit poor oral health, with 10–30% having pockets >4 mm, emphasizing the need for regular care.

(e) Xerostomia (Dry Mouth)

Numerous elderly individuals encountered xerostomia for various reasons (Bergdahl, 2000). Notably, secretion from the principal salivary glands did not experience clinically significant reductions in healthy elderly individuals (Ghezzi *et al.*, 2000). Clinicians must not ascribe symptoms of xerostomia and evidence of salivary hypofunction in an elderly individual to ageing; a proper diagnosis is essential. Salivary abnormalities in the elderly are typically attributed to systemic illnesses and their corresponding therapies, such as anticholinergic medicines or radiation therapy.

Sjogren's Syndrome, diabetes, Alzheimer's disease, dehydration, head and neck irradiation, and chemotherapy can cause or worsen salivary gland diseases. Moreover, research indicated that salivary glands were susceptible to the detrimental effects of these disorders in the elderly (Ghezzi & Ship, 2003), thereby contributing to the heightened incidence of salivary issues with advancing age.

(f) Oral Cancer

Oral cancer is a major health issue for adults and seniors in developed and developing nations. This includes lip, oral cavity, and pharyngeal cancer, the eighth most common cancer worldwide (Petersen *et al.*, 2005). Males are more likely to die. Oral cancer becomes more common with age, especially in people over 65. Risk profiles and healthcare access, among other variables, cause national disparities. We highlighted its prevalence in south-central Asia and growth in rich nations (Peterson *et al.*, 2013).

Oral cancer is commonly addressed with surgical intervention, radiation, and/or chemotherapy, with advancements resulting in decreased mortality rates and an increasing number of survivors. Cancer and its treatment can cause significant structural changes in the oral cavity and disrupt fundamental activities such as speaking, chewing, and swallowing, so greatly diminishing the quality of life for survivors (Torres-Carranza *et al.*, 2008). A multidisciplinary approach is crucial for mitigating the impact on patients, with dentists playing a significant role. Dental care prior to, during, and subsequent to treatment can enhance and sustain the quality of life for patients with oral cancer (Rogers, 2010). Nonetheless, the brief interval between diagnosis and treatment, along with insufficient training of dental practitioners in this domain, constitutes significant obstacles to the execution of this proactive strategy (Patel *et al.*, 2012).

(g) Tooth Loss and Edentulism

Tooth Loss and Edentulism (the complete loss of teeth) affects 25% of those over 60 in the U.S. and 21.7% in Canada, disproportionately impacting low-income individuals and women. Contributing factors include limited dental access, education, and insurance. While edentulism rates have declined due to better care, many elders rely on dentures, which can impair nutrition and self-esteem. Tooth loss reflects lifelong disease burden and socioeconomic disparities, necessitating policies to improve access and affordability.

2.3 Systematic Oral Health Care

Systematic oral health care, involving structured preventive strategies, routine evaluations, and coordinated treatment plans, is essential for maintaining oral and overall health, minimizing disease progression, and promoting long-term well-being.

Systematic oral health care refers to a comprehensive and organized approach to maintaining oral hygiene and managing oral diseases through preventive measures, regular monitoring, and timely interventions. Unlike sporadic or emergency-based dental visits, systematic care emphasizes continuity, patient education, and preventive strategies such as routine cleanings, fluoride application, dietary counseling, and early detection of oral diseases (Petersen *et al*., 2005). This proactive model not only prevents the development of common oral conditions like dental caries and periodontal disease but also reduces the risk of systemic health complications. For instance, early management of gingivitis can prevent its progression to periodontitis, which has been linked to systemic illnesses including diabetes, cardiovascular disease, and adverse pregnancy outcomes (Tonetti *et al*., 2017). By integrating oral health care into general healthcare systems, individuals can benefit from a more holistic approach that recognizes the interconnection between oral and systemic health.

Moreover, systematic care supports equity and access by promoting public health programs, school-based interventions, and community outreach, especially in underserved populations. These initiatives aim to reduce disparities in oral health outcomes by ensuring that preventive and curative services are available to all individuals, regardless of socioeconomic status (Listl *et al*., 2015). Additionally, the implementation of electronic dental records, clinical guidelines, and evidence-based practices improves the consistency and quality of care across dental practices.

Systematic oral health care also contributes to improved psychological and social well-being. By preventing oral pain, tooth loss, and aesthetic concerns, individuals are more likely to experience higher self-esteem and social confidence (Locker, 2004). From an economic perspective, investing in preventive and systematic care reduces long-term treatment costs and increases productivity by minimizing time lost due to dental issues. In conclusion, systematic oral health care is a critical component of modern healthcare. It provides a foundation for disease prevention, supports equitable access to care, enhances quality of life, and reduces overall healthcare costs. Promoting this approach through policy, education, and professional collaboration is essential for building healthier populations.

2.4 Prevention and Cure of Oral Diseases

Effective prevention and timely cure of oral diseases are essential strategies for maintaining oral health, reducing systemic health risks, and improving the quality of life through education, early intervention, and accessible dental care.

Prevention of oral diseases involves proactive, evidence-based procedures to reduce dental caries, periodontal disease, mouth infections, and other problems. The most effective preventive strategies include regular brushing with fluoride toothpaste, flossing, reducing sugar intake, using fluoride mouth rinses, and receiving routine dental check-ups and cleanings (Petersen *et al*., 2005). Community-based approaches, such as water fluoridation and school-based oral health programs, have also proven highly effective in reducing caries prevalence in children and adolescents. Preventive care is not only beneficial in avoiding disease onset but also plays a critical role in early detection, allowing minor conditions to be treated before they progress into more severe problems.

When oral diseases do occur, timely and appropriate treatment is crucial. For example, dental caries in its early stage can be reversed through remineralization therapies such as topical fluoride or casein phosphuretted-amorphous calcium phosphate (CPP-ACP) applications. However, if left untreated, the condition can advance and require restorative procedures like fillings, root canal therapy, or even tooth extraction (Tonetti *et al*., 2017). Similarly, gingivitis—the early stage of gum disease—can often be cured with improved oral hygiene and professional cleaning, while advanced periodontitis may necessitate surgical interventions.

Oral disease prevention and treatment also affect general health. Poor dental health increases the risk of cardiovascular disease, diabetic problems, respiratory infections, and pregnancy issues (Tonetti *et al*., 2017). By preventing and promptly treating oral diseases, individuals can significantly lower their risk of these systemic conditions. Additionally, untreated oral diseases can lead to pain, malnutrition, difficulty in speech, and low self-esteem, affecting mental and social well-being (Locker, 2004).

Economically, prevention is far more cost-effective than treatment. Investing in public health campaigns, routine care, and dental education reduces the need for complex, expensive procedures and decreases productivity losses due to dental emergencies (Listl *et al*., 2015). In conclusion, preventing and curing oral diseases should be a top health priority. Through public education, accessible services, and

early intervention, the burden of oral diseases can be dramatically reduced, leading to healthier individuals and communities.

2.5 Global Situation of Oral Health and General Health in Elderly

Oral health has been vital to health since the WHO introduced it. Some use oral health and dental health interchangeably, but oral health goes beyond mouth sickness. It encompasses optimal functioning, as well as social and psychological well-being, within the broader context of an individual's environment (Locker 1997). This holistic approach supports the socio-environmental paradigm, which holds that social, psychological, and biological variables affect oral health (Medin *et al*. 2000).

Oral health affects physical, mental, and social wellbeing. Healthy oral function—the capacity to chew, talk, and smile—is crucial for quality of life, especially in the elderly. (Hugoson *et al*., 2003) describe oral health as experienced and sufficient oral functioning adjusted to individual conditions and the absence of illness. Dolan's concept of health emphasizes a pleasant and functioning dentition that allows people to perform their social obligations (Dolan, 1993).

Locker adds that oral health should also evaluate how oral illnesses and ailments affect an individual's overall health and quality of life. Functional and psychological well-being can be affected by oral disorders, whether they are localized or systemic (Locker 1997). Even if people say they have good dental health, tooth loss might affect nutrition, self-esteem, and social involvement.

Self-ratings (very excellent to bad) and objective indicators such the number of remaining teeth, dental disease, and capacity to execute everyday oral duties are used to assess geriatric oral health. These indicators highlight oral health's clinical, social, and psychological aspects, emphasizing the need for a holistic approach to oral health treatment in aging populations.

2.6 Functional Teeth (FT) and Functional Teeth Units (FTUs)

Dental status is evaluated through key indices such as the number of natural teeth and functional teeth units (FTUs). Natural tooth retention reflects oral health, as tooth loss—driven by caries, periodontal disease, or trauma—impairs masticatory function. FTUs, defined as pairs of opposing teeth, better assess oral function and chewing efficiency than tooth count alone. Studies link fewer FTUs to chewing difficulties, dietary limitations, and even physical disabilities, underscoring their clinical relevance (Ueno, 2008; Shinkai, *et al.,* 2001).

Globally, the World Health Organization (WHO) advocates retaining ≥20 natural teeth lifelong without prostheses, a goal echoed by the Federation Dentaria International (FDI) for adults ≥65. Japan's 8020 Campaign (1989) and *Healthy Japan 21* (2000) promote retaining ≥20 teeth by age 80 to enhance life expectancy and health. Despite these initiatives, few studies explore the relationship between FTUs, natural teeth retention, and masticatory ability. Japanese research highlights the need to analyze how FTUs influence dietary habits and systemic health in aging populations (Gary *et al*., 1997).

2.6.1 Functional Teeth (FT)

Reduced FT correlates with chewing difficulties, avoidance of fibrous or hard foods (e.g., meats, vegetables), and impaired swallowing, leading to poor nutrition and systemic health risks (Hildebrandt *et al*., 1997). Tooth loss also impacts speech, facial aesthetics, and social engagement, diminishing quality of life (Schechtman & Ory, 2001). Individuals with fewer FT often shift to soft, low-fiber diets lacking essential nutrients, exacerbating health disparities (Chauncey *et al*., 1984). Socioeconomically disadvantaged groups with masticatory impairments report higher rates of diabetes, hypertension, and cardiovascular issues (Chen & Lowenstein, 1984).

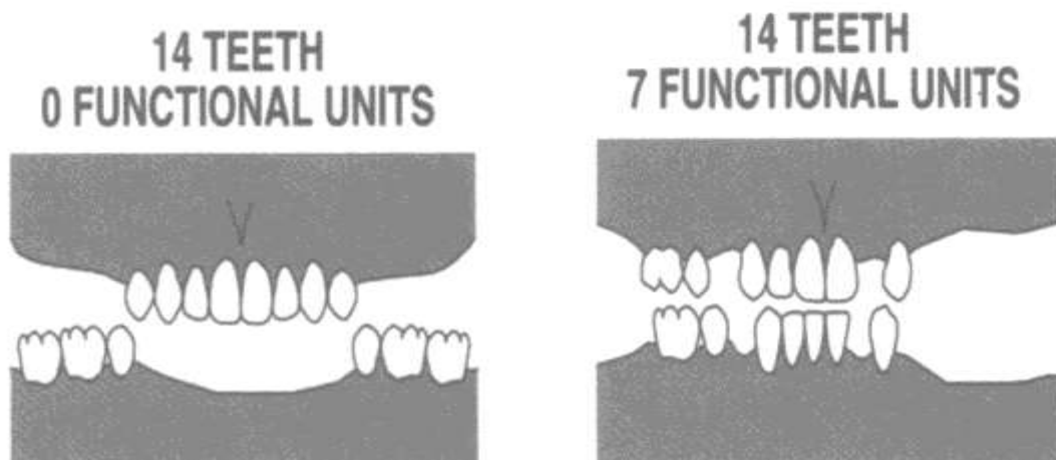
Tooth loss further destabilizes oral health: remaining teeth drift, occlusion alters, and plaque accumulation increases, particularly with prostheses (Brill *et al*., 1977). Periodontal disease and alveolar bone loss worsen as FT declines, creating a cycle of deterioration (Chen & Lowenstein, 1984).

2.6.2 Functional Teeth Units (FTUs)

FTUs—opposing natural or prosthetic tooth pairs—better predict masticatory efficiency than total tooth count. For example, 14 teeth with no opposing contacts yield 0 FTUs, whereas 14 teeth forming 7 opposing pairs equate to 7 FTUs (Figure 2.3). This metric account for functional arrangement, critical for assessing chewing capacity (Hildebrandt *et al*., 1997; Loesche *et al*., 1995).

FTUs influence dietary choices and nutrient intake. Lower FTUs correlate with reduced masticatory performance, increasing reliance on processed foods and worsening systemic health. Retaining FTUs is thus vital for preventing malnutrition and chronic diseases. Campaigns prioritizing natural tooth retention and FTU preservation align with broader public health goals, emphasizing oral health's role in holistic well-being.

Figure (2.1) The Differences between the Numbers of Teeth Presence and the Number of Functional Units Presence



2.7 Quality of Life, Health related quality of life and Oral Health related Quality of life

2.7.1 Quality of Life

Quality of Life (QOL) integrates both objective and subjective evaluations of life circumstances, serving as a critical metric for assessing healthcare impacts (Naudoo, 2000). (Fallowfield,1990) delineates QOL into four domains: *psychological* (e.g., mental health), *social* (e.g., community engagement), *occupational* (e.g., work capacity), and *physical* (e.g., pain, mobility). Existing models, however, often lack multidimensionality, spanning need-based frameworks like Maslow's hierarchy (1954) to those emphasizing psychological well-being, life satisfaction (Andrews & Withey, 1976; Larson, 1978), and individual perceptions (O'Boyle, 1992).

Despite its utility, QOL resists a universal definition. (Fallowfield, 2009) notes its complexity, requiring adaptability to capture biological, psychological, and socioeconomic impacts of illness. Locker (1997) argues QOL is inherently personal, shaped by individual values, while the University of Toronto defines it as "enjoying life's possibilities" (Raphel *et al*., 1994). (Gabriel & Bowling, 2004) stress societal influences, acknowledging shared values that shape collective QOL. (Eklund & Burt, 2002) further underscore its multidimensionality, blending clinical metrics with subjective experiences.

QOL assessment employs instruments like the *Index of Morale* (Ellithorpe, 1983), which evaluates aging attitudes (e.g., "Things keep getting worse"), and the *Perceived Life Stress Questionnaire* (Levenstein, *et al*., 1993), gauging stress via items like "too many demands." The *Life Satisfaction Scale* (Michalos, 1980) adapts Locker's seven dimensions—functional limitation, pain, disability—to assess life domains, while the *General Health Questionnaire* screens for anxiety and depression, reflecting mental health's role in QOL.

2.7.2 Health-Related Quality of Life (HRQoL)

HRQOL, a subset of QOL, focuses on health impacts. Studies link physical disability and dependency in daily activities to declines in HRQOL's physical and general health domains, though psychological and socioeconomic aspects remain less predictable (Anderson *at el*., 1996). (Patrick & Erickson, 1993) define HRQOL as a multidimensional construct capturing daily life factors affected by health, including

physical function, emotional state, and social well-being. (Slade, 2002) reinforces this, noting HRQOL's emphasis on individual perceptions of health's influence on life quality.

Table (2.1) Concepts and Domains of Health-related Quality of Life (HRQoL)

Domain	Characteristics
Opportunity	Social or cultural handicap, individual resilience
Health Perceptions	Satisfaction with health, general health perceptions
Functional status: Social	Limitations in usual roles, integration, contact, intimacy
Functional status: Psychological	Affective states, cognitive capacity
Functional status: Physical	Activity restrictions, fitness
Impairment	Complaints, signs, self-reported disease, physiologic measures, diagnoses
Death and duration of life	Morality, survival, longevity

Source: (Wilbur, 2005)

This list covers traditional clinical metrics and epidemiologic indices, which the socio-medical indicators movement rejected to reduce overreliance on traditional medical measures (Slade, 2002).

Some indistinguishable from measures of health; QOL is much measures of QOL include items that are broader than health (Inglebart, 2002). Following the model of (Wilson & Cleary, 1995), Locker stated that QOL is determined both by characteristics of the person as well as by nonmedical factors. It was suggested that Health-Related Quality of Life (HRQOL) was defined as "a person's assessment of how the following types of factors affect his or her well-being: (1) functional factors; (2) psychological factors (concerning the person's self-esteem and appearance); (3) social factors (such as interaction with others); and (4) the experience of pain / discomfort" (Inglebart, 2002).

Likewise, (Fallowfield, The Handbook of Contemporary Clinical Hypnosis: Theory and Practice: What is quality of life?) described the core components or domains of multidimensional HRQOL as shown in the **Figure (2.2)**.

Figure (2.2) Core Domains or Components of Multidimensional HRQOL Assessment

Source: adapted from (Fallowfield, The Handbook of Contemporary Clinical Hypnosis: Theory and Practice: What is quality of life?).

2.7.3 Oral Health-related Quality of Life (OHRQOL)

Evaluating the influence of oral problems on quality of life is a crucial aspect of measuring oral health. It is widely acknowledged that there are significant limitations in exclusively use clinical normative measures to evaluate oral health status and requirements. Clinical measurements neglect the individual's subjective health condition and perceived requirements (Sheiham & Tsako, 2007). Health today includes physical, social, and psychological well-being (WHO, 1986). Figure 2.3 shows oral health-related quality of life when four factors—functional, psychological, social, and pain/discomfort—focus on orofacial concerns.

Figure (2.3) The Main Components of OHRQOL

Source: (Inglebart, 2002)

Locker and Allen (2007) defined "oral health-related quality of life (OHRQOL)" as oral health diseases and treatments' effects. This concept covers how oral problems impact daily life and is crucial to health and well-being. The WHO included OHRQOL in the Global Oral Health Program (GOHP) (Locker, 1988).

It has been extensively utilized in both theoretical and practical domains, including dental research, clinical trials, and other studies assessing the efficacy of preventative and therapeutic programs (Rodakowska *et al*., 2014). To evaluate the oral health-related quality of life, many tools including multiple socio-dental indices are utilized. Locker (1989) characterized these indications as "measures of the degree to which dental and oral disorders impede normal social role functioning and result in significant behavioral changes, such as the inability to work, attend school, or fulfill parental or household responsibilities." It may be utilized to evaluate both subjective oral health and the social ramifications of dental illnesses.

The commonly used indicators in OHRQOL measures (Slade and Atchison, measuring oral health and quality of life: "The Geriatric Oral Health Assessment Index (GOHAI)") are as follows;

The Social Impacts of Dental Disease (SIDD)

- The Sickness Impact Profile (SIP)
- Dental Health Questions from “The Rand Health Insurance Study” (HIS)
- The Geriatric Oral Health Assessment Index or The General Oral Health Assessment Index (GOHAI)
- The Dental Impact Profile (DIP)
- The Oral Health Impact Profile (OHIP)
- Subjective Oral Health Status Indicators (SOHSI)
- The Oral Health-Related Quality of Life Measure (OHQOL)
- Dental Impacts on Daily Living (DIDL)
- Oral Health Quality of Life Inventory (OH-QoL)
- Oral Impacts on Daily Performance (OIDP)

The Geriatric Oral Health Assessment Index (GOHAI) is an easily administered measure of patient-reported oral functional issues among the OHRQOL assessments (Slade and Atchison, Measuring oral health and quality of life: "The Geriatric Oral Health Assessment Index (GOHAI)"). It is intended to assess the extent of psychological effects related to oral disorders and is now undergoing evaluation as a metric for determining the efficacy of dental treatments (Kathryn & Atchison, 1997). The GOHAI was originally evaluated using a convenience sample of 87 elderly individuals. A modified instrument was subsequently administered to a cohort of 1911 Medicare beneficiaries in Los Angeles County (Atchison & Dolan, 1990). GOHAI serves as an effective metric for the elderly to assess their oral health-related quality of life and is appropriate for evaluating the OHRQOL status of the aged population.

(a) Geriatric Oral Health Assessment Index or General Oral Health Assessment Index (GOHAI)

Kathryn (Slade and Atchison, Measuring oral health and quality of life: "The Geriatric Oral Health Assessment Index (GOHAI)") stated “the Geriatric Oral Health Assessment Index (GOHAI)” that measures smanner” and “the measure, based on a patient-centered definition of oral health for older adults, includes items regarding

freedom from pain and infection, and the patient's ability to continue in his or her desired social roles". This differs from illness-centered epidemiological measurements of dental health, which focus on disease occurrence or absence (Atchison, 1997). Atchison and Dolan (1990) created the GOHAI to assess the psychological effects of oral disorders, one of the first to recognize the advantages of oral health in the elderly.

Physical (eating, talking, and swallowing), psychological (oral health concerns, self-image, self-consciousness, and social avoidance due to oral difficulties), and pain/discomfort were the GOHAI's three dimensions. Twelve items were created based on a literature review and consultations with health professionals and patients, demonstrating strong internal reliability and significant correlations with self-assessed oral health and clinical data, including tooth mobility and root and coronal caries, in an elderly population (Kressin *et al*., 1996). Subsequently, GOHAI was employed across several age demographics, demonstrating adequate reliability and validity. The initial term in the measure's designation was subsequently altered from Geriatric to General (Atchison, 1997). Longitudinal research indicated that the GOHAI may serve as an outcome measure for assessing treatments, as the instrument reflected changes, including the receipt of dental care (Dolan & Gooch, 1991). Initial pretest measures contained 36 items. The subject was asked to rate difficulties on a five-point Likert scale, where 0 means never, 1 means seldom, 2 means occasionally, 3 means frequently, 4 means very often, and 5 means always. Final instrument selection was based on first 36 item replies. Frequency distributions, correlations, and the scale's internal consistency (Cronbach's alpha) were examined with and without each item. A final instrument with 12 questions representing three proposed aspects had the optimum response distribution and maximum Cronbach's alpha. Dental health affects daily life, comfort, and social interactions. The range extends from 0 (indicating great OHRQoL) to 60 (indicating poor OHRQoL). Elevated GOHAI values indicate substandard oral health, whereas diminished GOHAI levels reflect improved oral health and quality of life. GOHAI assists in identifying people at risk who require dental care and monitors progress following treatment. The derivation of the GOHAI score utilizes replies to nine items, whereby lower final scores indicate more favorable oral health. The GOHAI score was calculated by aggregating the final scores of all 12 components. GOHAI scores vary from 0 to 60.

GOHAI has been translated, verified, and utilized in several countries (Tubert-Jeannin *et al*., 2003).

2.8 Review of the Previous Studies

Japan provides a relevant comparison, as it has the world's highest life expectancy and a rapidly aging society (UN, 2013). The Ministry of Health and Welfare of Japan (1992) predicted that Japan will have the greatest aging rate by 2010. The Ministry of Health and Welfare of Japan (1997) anticipates that 2.8 million elderly would need long-term care by 2000. In 2000, Japan established a national long-term care insurance scheme to manage costs and offer necessary health treatments to functionally dependent older people (Ikegami, 1997).

A study by (Aung *et al*., 2018) found that over 60% of Myanmar's elderly population has untreated cavities or periodontal disease.

Financial barriers such as many seniors cannot afford private dental care, and public services are underfunded, workforce shortages which are few dentists specialize in geriatric care, leading to inadequate treatment (Aung *et al.,* 2018).

Challenges in Policy Implementation are geographic disparities for rural elderly populations have minimal access to dental facilities (Thein *et al*., 2023).

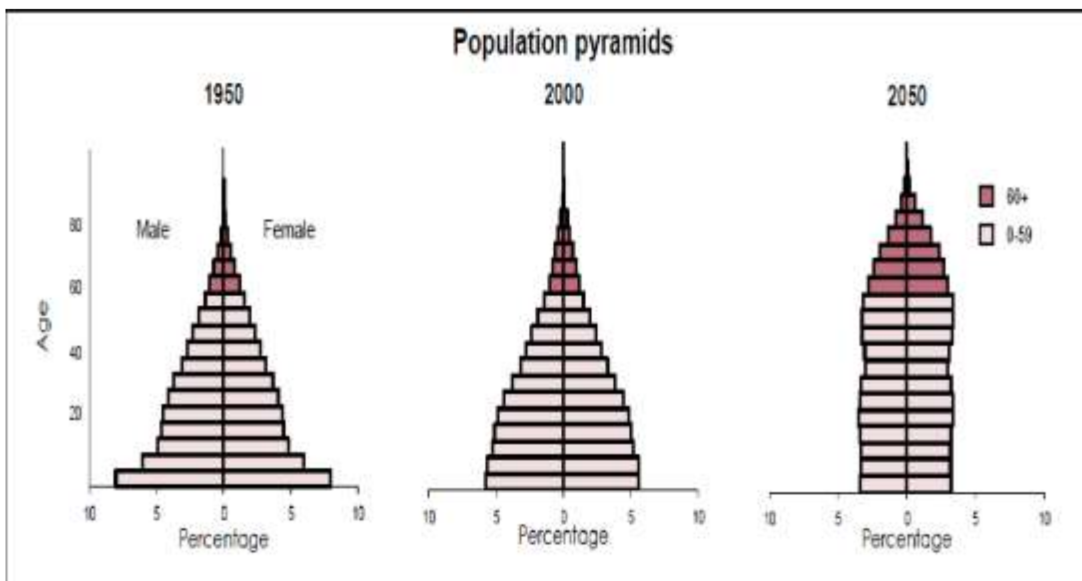
One study examines Myanmar's current oral health policies for the elderly, evaluates their effectiveness, and identifies areas for improvement. The National Oral Health Policy (2020), developed by the Ministry of Health (MOH), includes provisions for elderly dental care, such as: preventive measures: Oral health education, fluoride programs, and basic screenings in community health centers (MOHS, 2020), public dental services: Free or low-cost treatments in government hospitals, though availability is limited in rural areas (Aung *et al.,* 2018), training initiative.

CHAPTER III
OVERVIEW OF CURRENT ORAL HEALTHCARE IN MYANMAR

3.1 Aging Population in Myanmar

Myanmar, like many countries worldwide, is witnessing a significant rise in its elderly population, defined as individuals aged 60 years and above. The proportion of elderly people has been steadily increasing globally: in 1950, those aged 60 and above made up 8% of the world's population (about 205 million), rising to 11% in 2010, and is projected to reach nearly 22% (2 billion) by 2050 (United Nations, World Population Ageing 2002; Graeme). Myanmar mirrors this trend, with the number of elderly residents climbing from approximately 976,900 in 1950 to 3,240,800 in 2000 (United Nations, World Population Ageing 2002). Projections indicate that the percentage of elderly in Myanmar could reach 21.6% by 2050, up from just 5.5% in 1950, 6.4% in 1975, and 6.8% in 2000 (United Nations, 2002).

Figure (3.1) Population Pyramids of Myanmar in 1950, 2000 and 2050

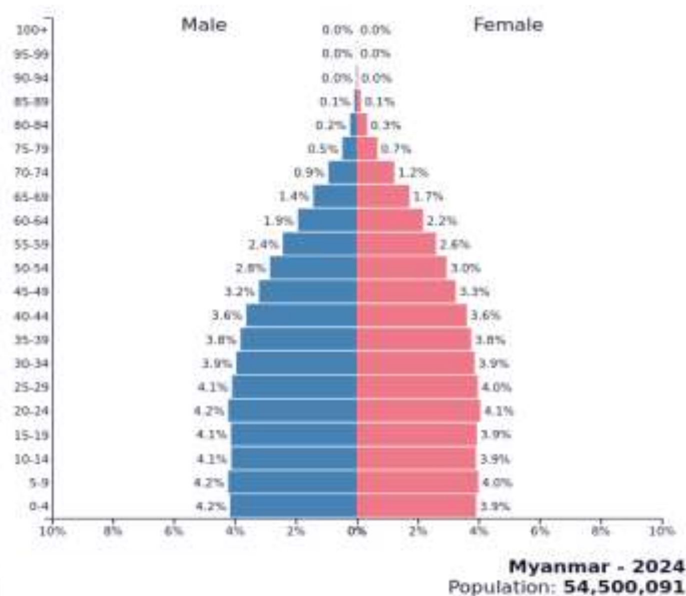


Source: World Population Ageing 1950-2050, Population Division, DESA, UN, 2024

Research highlights that elderly populations face unique health challenges, not only due to age-related diseases but also because of limited access to medical and dental care, which can negatively impact their quality of life and social engagement (Murariu & Hanganu, 2011). Furthermore, mental health issues and lifestyle changes may restrict social interactions, further affecting oral health-related quality of life (Murariu, 2008).

The 2014 Myanmar Population and Housing Census reported that the number of elderly residents was 2,897,536, accounting for 5.8% of the population at that time (UNFPA, 2014). This estimate surpasses earlier projections based on population pyramids, indicating a faster-than-expected demographic shift (UNFPA, 2014).

Figure (3.2) Population Pyramids of Myanmar Census in 2024



Source: UNFPA; Department of Population, 2025

3.2 Existing Community oral health services and oral health promotion

Good oral health is essential for general health and quality of life. Although oral diseases can be prevented, dental caries and periodontal diseases are the most common worldwide, affecting 3.9 billion people, with untreated caries in permanent teeth being the most common (Marcenes *et al.*, 2013). Unlike non-experts, dental

professionals assess fundamental dental health needs and develop effective community oral health plans.

The Myanmar Dental Council (MDC), established under the Myanmar Dental Council law and sanctioned by the Ministry of Health, Myanmar, is crucial in maintaining and improving dental practitioners' qualifications and standards of healthcare services and overseeing ethical standards (Myanmar Dental Council, 2018). The Myanmar Dental Association (MDA), established in 1979 as a voluntary organization, significantly contributes to the advancement of dental professionals in Myanmar. Local sections of MDA are engaged in providing training, ongoing education programs, and supporting healthcare services to the community. Training programs for dental therapists and dental hygienists should be established to enhance the oral health workforce's ability to advocate for oral health, and to provide suitable preventative programs and services.

The Myanmar Ministry of Health's Oral Health Unit provides regular oral health treatment nationally through state and regional oral health sections. Public oral health care services prioritize rural and remote primary oral health care according to national strategies. Health promotion and education, disease prevention, basic and emergency oral health care, and excellent regular oral health care in hospitals, urban health centers, and schools are included. Health services at schools began in 1996 under "Health Promoting School". The "Primary Oral Health Care (POHC)" initiative is part of the "Community Health Care Program" and was launched in 1991 with assistance from the WHO (Aung *et.al.,2018*).

3.3 Overview of Dental Professional in Myanmar

Oral health care in Myanmar faces significant challenges due to limited resources and workforce shortages. As of 2025, there are only 5,479 registered dentists in the country, resulting in a dentist-to-population ratio of approximately 1: 9000, which is far below the World Health Organization's recommended ratio of 1:5,000 for developing nations. Dental education is provided by only two public universities: the University of Dental Medicine - Yangon and the University of Dental Medicine - Mandalay. However, the country still lacks dental hygienists, and the production of dental nurses remains limited, further straining the oral health care system (Ministry of Health, Myanmar, 2024). Preventive dental care is

underdeveloped, and access to treatment is often restricted to urban areas, leaving rural populations underserved. The absence of mid-level dental providers exacerbates the burden on dentists. To improve oral health outcomes, Myanmar needs to expand dental training programs, introduce hygienist roles, and strengthen preventive care initiatives.

3.4 Special Oral Health Care for Elderly in Myanmar

Myanmar is undergoing a significant demographic shift, with its elderly population (aged 60 and above) increasing rapidly. As of 2023, approximately 6.03 million individuals, or 11% of the total population, fall into this age group. Projections indicate that by 2050, this figure will rise to 11.6 million, representing 19.3% of the population. This rapid aging trend highlights the necessity for healthcare systems, especially dental treatments, to adapt to older individuals' demands. Elderly people are more likely to develop diabetes and cardiovascular disease, which can harm oral health. Thus, older oral health care techniques must be developed.

In Myanmar, senior oral health is ignored despite its importance to their well-being. The first national oral health study in 2016–2017 found that 93.6% of 60–74-year-olds had dental caries, with a mean DMFT score of 11.5. Additionally, 35.2% of this age group had periodontitis. Lack of geriatric dental experts and limited dental care, especially in rural regions, exacerbate these concerns. Financial restrictions and a lack of information prevent the elderly from receiving regular dental treatment, resulting in poor oral health and quality of life.

To address these challenges, Myanmar must implement comprehensive strategies focusing on prevention, education, and improved access to dental care for the elderly. Integrating oral health into general geriatric care, training dental professionals in geriatric dentistry, and expanding community-based services can significantly enhance outcomes. Public health campaigns targeting caregivers and families should raise awareness about the importance of oral hygiene in aging. Furthermore, government support is vital to subsidize dental services for the elderly and establish mobile dental clinics in remote areas. As Myanmar's elderly population continues to grow, a well-structured oral health care system will be essential to reduce the burden of oral diseases and promote healthy aging.

3.5 Oral Health Care Challenges Among the Elderly in Myanmar

Elderly individuals in Myanmar often suffer from poor oral health due to a combination of factors: Many rural areas lack dental clinics, and elderly individuals may struggle with mobility or financial constraints (Ministry of Health [MOH], 2020). Chronic diseases like diabetes and hypertension worsen oral health, yet integrated care is rare (WHO, 2021). Myanmar's National Oral Health Policy includes elderly care, but implementation remains weak due to insufficient trained geriatric dentists, low awareness of oral hygiene among caregivers, cultural beliefs that neglect dental care in old age (MOH, 2020). Improving oral health care for Myanmar's elderly requires targeted interventions, better accessibility, and awareness campaigns. By addressing these gaps, Myanmar can ensure healthier aging for its senior population.

If detected and treated early, oral ailments can be avoided or treated simply. This requires refocusing on oral health care integration with primary health care (PHC), including prevention and promotion outside of oral health institutions. The "Basic Package of Oral Care and Services" under the new universal health care framework must be implemented to address oral health disparities in urban and rural Myanmar. Auxiliary dental health professionals, including dental hygienists and dental therapists, should get training to deliver primary oral health care services in disadvantaged geographical areas (Sein, *et al*., 2014).

3.6 Current Policies of Oral Health Care for the Elderly in Myanmar

The elderly population of Myanmar has considerable oral health issues, characterized by elevated incidences of tooth loss, periodontal disease, and restricted access to dental care. While the government has introduced policies to address these issues, implementation gaps persist. Workshops for dental professionals on geriatric oral health, though participation remains low (WHO, 2022), Additionally, Myanmar's National Health Plan (2017 - 2021) emphasized integrating oral health into general elderly care, but progress has been slow due to funding constraints (MOH, 2020).

To enhance elderly oral health care, Myanmar should strengthen community-based programs, such as mobile dental clinics and outreach campaigns, increase budget allocation for public dental services targeting the elderly, expand training programs for dental professionals in geriatric care, improve public awareness through media campaigns and caregiver education. While Myanmar has established policies to

support elderly oral health, systemic challenges hinder their effectiveness. Greater investment, workforce training, and community engagement are needed to ensure equitable access to dental care for the aging population.

3.7 Future Oral Health Care Plan and Situation in Myanmar for Elderly

By 2050, over 15% of Myanmar's population will be aged over 60, increasing demand for elderly-specific dental services (UN, 2023). Existing gaps include infrastructure limitations, few geriatric dental clinics exist, especially in rural areas (MOH, 2022), workforce shortages, insufficient dentists trained in elderly care (Aung *et al*., 2018), financial barriers. Most elderly rely on underfunded public health services (WHO, 2023). Proposed Future Oral Health Care Plan are expansion of Geriatric Dental Services, establish dedicated elderly dental units in regional hospitals, deploy mobile clinics to remote communities (MOHS, 2022), workforce development, introduce geriatric dentistry training in medical curricula and offer continuing education for current practitioners (Aung *et al*., 2018)**.**

Policy and Funding reforms increasing the government health budgets for elderly oral care programs, partner with NGOs for community-based initiatives (WHO, 2023), public Awareness Campaigns, educate caregivers on elderly oral hygiene maintenance, utilize media to promote regular dental check-ups (Thein *et al.*, 2024). If implemented, these measures could reduce prevalence of tooth loss and gum disease among elderly, improve accessibility and affordability of dental care, enhance quality of life for Myanmar's aging population. Myanmar must prioritize geriatric oral health in its future health care planning. Strategic investments in infrastructure, workforce training, and public awareness will be crucial to meet the needs of its growing elderly population.

CHAPTER IV
SURVEY ANALYSIS

4.1 Profile of Study Area

The current study observed the institutionalized elderly respondents from two Home-for-Aged (Catholic Home-for-Aged, Mingalar Taung Nyunt and Shwe Than Lwin Home-for-Aged, Dagon Seikkan). In these Home-for-Aged, there are about 126 elderly respondents (50 from Catholic Home-for-Aged and 76 from Shwe Than Lwin Home-for-Aged).

4.2 Survey Design

Descriptive cross-sectional study including, clinical oral health assessments conducted by trained dental professionals using standardized diagnostic criteria for dental caries, remaining teeth, oral health behavior, functional teeth (FT) and functional teeth units (FTUs), OHRQoL assessed by using a validated tool, such as the Geriatric Oral Health Assessment Index (GOHAI), which capture the physical, psychological, and social dimensions of oral health structured interviews collect information on age, gender, duration of institutionalization, and other relevant variables.

The required sample size estimation in this study was calculated with the reference results from the title of "relationship of number of remaining teeth to health-related quality of life in community-dwelling elderly" (Gary, Hildebrandt, & B, 1997). Sample size of participants of 50 elderlies from Catholic- Home-for-Aged and 76 elderlies from Shwe Than Lwin Home for Aged for the study (Total – 126 participants).

4.3 Socio-demographic Characteristics (Profiles) of Elderly Respondents

The present study was conducted convenient sampling among elderly who were aged 65 years old and above from two selected Homes for Aged. The 50

participants were selected from Catholic Home for Aged, and 76 participants were selected from Shwe Than Lwin Home for Aged.

The study population was ranged from "65 to 95" in both homes for Aged. The mean ages of the study were 76 years old for both, nearly 78 years old in Catholic Home for Aged and 76 years old in Shwe Than Lwin Home for Aged.

Table (4.1) Socio-demographic Profiles of Elderly Respondents (N= 126)

Socio-demographic Characteristics	Catholic (n = 50) Number (%)	Shwe Than Lwin (n = 76) Number (%)	Total Elderly (n=126) number & %
Age (mean & SD)	77.92 (7.60)	75.99 (0.44)	76.75 (6.92)
Between 65 to 75	24 (48%)	37(48.7%)	61 (48.4%)
Between 76 to 85	18 (36%)	36 (47.4%)	54 (42.9%)
Above 86	8 (16%)	3 (3.9%)	11 (8.7%)
Gender			
Male	15 (30 %)	19 (25 %)	34 (27%)
Female	35 (70 %)	57 (75 %)	92 (73%)
Ethnic Group			
Bamar	23 (46%)	52 (68%)	75 (60%)
Ethnic	16 (32%)	15 (20%)	31 (25%)
Other	11 (22%)	9 (12%)	20 (15%)
Occupation			
Unskilled	10 (20 %)	15 (19.74 %)	25 (19.8%)
Famers	6 (12 %)	1 (1.32 %)	7 (6%)
Government servant	15 (30 %)	25 (32.89 %)	40 (31.8%)
Profession	8 (16 %)	9 (11.84 %)	17 (13.5%)
Dependent	1 (2 %)	16 (21.05 %)	17 (13.5%)
Seller	5 (10 %)	7 (9.21 %)	12 (9.5%)
Others	5 (10 %)	3 (3.95 %)	8 (6.3%)

Table (4.1) Socio-demographic Profiles of Elderly Respondents (N= 126) (Continued)

Education Year			
Illiterate	8 (16%)	1 (1.31%)	9 (7%)
High School	31 (62%)	55 (72.36%)	86 (68%)
Graduate	9 (18%)	15 (19.73%)	24 (19%)
Post Graduate	2 (4%)	5 (6.6%)	7 (6%)

Source: Survey data, 2025

The present study is collected 126 elderly of age group (≥ 65 years old) and as shown in **Table (4.1)**. The older group (≥ 76 years old) is one-half of the total population and the other age group (≥ 65 to 75 years old) was one-half of the whole study population. One third of elderly is the age group (71 to 76 years old) in Catholic. In Shwe Than Lwin, the age group 71 to 80 years old is slightly more than age above 81-year-old. The more aged old people are found at Catholic Home for Aged than Shwe Than Lwin Home for Aged center.

According to the Table (4.1), the study population included 126 elderly which include 34 male (26.98%) and 92 female (70.02%). The distribution of gender in Catholic is 15 male (30 %) and 35 female (70 %), and that of Shwe Than Lwin is 19 male (25 %) and 57 female (75%). Age analysis shows that almost two third of total population or 92 (73%) are females and the rest one third or 34 (27%) are males.

Almost 60% of the participants are Bamar (75 elderly) and others included Chinese and Indians (20 elderly) and the rest (31 elderly) are of the native ethnic groups (Kachin, Kayah, Kayin, Chin, Mon, Rakhine and Shan). In this study, participants includes 75 Bamar (60%), 31 national races (25%) and 20 others (15%).

Among the total population of study, there were 25 (19.8%) are unskilled people, 7 (6%) are farmers, 40(31.8%) are government servant with the most. The professional level is found as 17 (13.5%), dependent people are 17 (13.5%), seller occupation with 12 (9.5%), and others with 8 (6.3%), respectively.

Educational background analysis reveals that 9 (7%) are illiterate, 86 (68%) are high school level, 24(19%) are graduate level, and 7 (6%) are post graduate level of education. A greater number are in high school level of education. Among two aged-centers, it found that 16% of Catholics (8 people) compares to 1 person (1%) of Shwe Than Lwin are illiterate. Analysis of high school level results show that 62% of Catholics (31 people) and 72% of Shwe Than Lwin (55 people). Regarding the

graduate elderly, 18% of Catholics (9 people) and 20% of Shwe Than Lwin (15 people) hold a graduate degree. The 4% of Catholic (2 people) and 7% of Shwe Than Lwin (5 People), are post graduate level of education. From this data, it finds that the Shwe Than Lwin group has slightly higher percentages in high school, graduate, and postgraduate education, while the Catholic group has a higher percentage of illiteracy.

The study found that of merchant/sellers and professional people are more numbers present in Catholic Home for Aged, while significant composition of dependents at Shwe Than Lwin Home for Aged. On the other hand, only three professional elderly are present in Home for Aged.

4.4 Oral Hygiene Behavior and Oral Habit of Elderly Respondents

Oral hygiene behavior and oral habit is analyzed by comparing between 50 respondents from Catholic and 76 from Shwe Than Lwin Home for Aged. It analyzes tooth brushing behavior, and bad oral habit behavior.

4.4.1 Oral Hygiene Behavior (Tooth Brushing)

Table (4.2) illustrates the oral hygiene behavior by tooth bruising behavior among Catholic and Shwe Than Lwin Centers, as follows:

Table (4.2) Oral Hygiene Behavior of Elderly Respondents (Tooth Brushing = TB)

Characteristics of Oral Hygiene Habit	Catholic (n = 50) Number (%)	Shwe Than Lwin (n = 76) Number (%)	Total Elderly (n=126) Number & %
TB Yes/No			
• No	2 (4 %)	6 (7.89 %)	8 (6%)
• Yes	48 (96 %)	70 (92.11 %)	118 (94%)
TB Frequency			
No	2 (4 %)	6 (7.89 %)	8 (6%)
Once a day	19 (38 %)	20 (26.32 %)	39 (31%)
Twice a day	22 (44 %)	47 (61.84 %)	69 (55%)
> Twice a day	7 (14 %)	3 (3.95 %)	10 (8%)

Table (4.2) Oral Hygiene Behavior of Elderly Respondents (Tooth Brushing = TB) (Continued)

Use of Toothpaste				
No	2 (4 %)	6 (7.89 %)	8	(6%)
Toothpaste (TP)	46 (92 %)	66 (86.84 %)	112	(89%)
Alternative to (TP)	2 (4 %)	4 (5.26 %)	6	(5%)
TB Method				
No	2 (4 %)	6 (7.89 %)	8	(6%)
Vertical (V)	13 (26 %)	8 (10.53 %)	21	(17%)
Horizontal (H)	24 (48 %)	36 (47.37 %)	60	(48%)
Both (V) + (H)	11 (22 %)	26 (34.21 %)	37	(29%)

Source: Survey data, 2025

Where: Tooth Brushing = TB, Toothpaste = TP, Vertical = V, Horizontal = H

The present study on tooth brushing behaviors of total 126 respondents report that and 48 (96 %) out of a total of 50 aged people from Catholic Center brushed their teeth, while 70 (92.11 %) out of a total of 76 aged people from Shwe Than Lwin center did.

Among the study population, 2 participants (4%) from Catholic center reported that they did not brush their teeth while 6 participants (7.89 %) from Shwe Than Lwin did not brush their teeth.

Regarding the frequency of tooth brushing among the study population, the Catholic elderly reported that 2 participants (4 %) did not brush, 19 participants (38 %) brush their teeth once a day. 22 participants (44 %) reported that they brush their teeth twice a day, and 7 participants (14 %) brush more than twice a day.

In studying tooth brushing habit among 76 participants of Shwe Than Lwin elderly, 6 (7.89 %) elderly do not have habit to brush their teeth, 20 participants (26.32 %) brush their teeth once a day, 47 (61.84 %) reported that they brush their teeth twice a day, and 3 (3.95 %) reported that they brush more than twice a day.

The behavior of the use of material of the tooth brushing with tooth paste is analyzed. By the analysis on Catholic elderly, the study found that 2 (4 %) participants among total of 50 elderly did not use any tooth brush and tooth brushing material, 46 respondents (92%) reported that they use toothpaste, and 2 respondents (4 %) reported that they use alternative to toothpaste.

In the analysis among elderly from Shwe Than Lwin, it finds that 6 participants (7.89 %) did not brush with toothpaste, 66 (86.84 %) reported that they used Toothpaste (TP), and 4 (5.26 %) reported that they used any alternative material instead of toothpaste. Among the community elderly, 112 out of a total of 126 elderly (89%) used toothpaste and tooth brush, 6 elderly (5%) used alternative to tooth paste (e.g., ash, salt, etc.), and 8 elderly (6%) did not use any toothpaste and toothbrush.

The participants also reported as 8 elderly (6%) did not use tooth brush and toothpaste, 21 participant (17%) used vertical method of tooth brushing, 60 (48%) used horizontal tooth brushing method, and 37 elderly (29%) used both vertical and horizonal methods. Majority of elderly used both of horizontal and vertical method of tooth brushing in this study**.**

4.5 Assessing Oral Habit Behavior of Elderly Respondents

Regarding the analysis on bad oral habit behavior (smoking, betel quid chewing, alcohol drinking), the study conducted descriptive analysis on the chosen elderly people from two centers. Table (4.3) reports on the 126 aged ole people reply on bad Oral Habit Behavior, as follows:

Table (4.3) Bad Oral Habit Behavior of Elderly Respondents (N= 126)

Characteristics of Bad Oral Habit	Catholic (n = 50) Number (%)	Shwe Than Lwin (n = 76) Number (%)	Total (n = 126) Number (%)
Bad Oral Habit			
• No	32 (64 %)	49 (64.47 %)	81 (64%)
• Yes	18 (36 %)	27 (35.53 %)	45 (36%)
Betel Quid Chewing			
• No	34 (68 %)	53 (69.74 %)	87 (69%)
• Yes	16 (32 %)	23 (30.26 %)	39 (31%)
Smoking			
• No	43 (86 %)	61 (80.26 %)	104 (83%)
• Yes	7 (16 %)	15 (19.74 %)	22 (17%)

Table (4.3) Bad Oral Habit Behavior of Elderly Respondents (N= 126)

(Continued)

Alcohol Drinking			
• No	40 (80 %)	62 (81.58 %)	102 (81%)
• Yes	10 (20 %)	14 (18.42 %)	24 (19%)

Source: Survey data, 2025

By the table, 18 (36 %) from Catholic and 27 (35.53 %) from Shwe Than Lwin described as the presence of bad oral habits. It presents that bad oral characteristics is more on Shwe Than Lwin old aged people center than Catholic center, and 23 (30.26%). Both Home for Aged from two centers had bad oral characteristics by 36%.

It was reported that 16 elderly (32 %) of the total study population from Catholic and 23 (30.26%) from Shwe Than Lwin center have bad oral habits of Betel Quid Chewing. Comparing the aged-old people, betel quid chewing habit is more on Shwe Than Lwin than Catholic center. Elderly people from both centers had betel quid chewing behavior by 39 elderly (31%).

In the analysis on smoking behavior as bad oral habit behavior, Table (4.3) illustrates that 7 (16 %) from Catholic center and 15 (19.74 %) from Shwe Than Lwin center were tanking smoking habits, and the most smokers were found in Shwe Than Lwin than Catholic Center.

Alcohol drinking behavior is also analyzed. By the Table (4.3), the study finds that 10 (20 %) out of a total 50 from Catholic center and 14 (18.42 %) of a total of 76 from Shwe Than Lwin are found as alcohol drinking habits. From both centers, alcohol drinking habit is found by 24 elderly (19%). Among the two centers, alcohol drinkers are more population than Catholic center.

By the Table (4.3), there are taking bad oral habit of betel quid chewing, smoking, drinking, and other type of using tobacco in this study. Survey finds that the bad oral healthcare behavior worse at Shwe Than Lwin than Catholic center. It means that Catholic is better oral health status than Shwe Than Lwin. Regarding the Betel Quid Chewing habit, it is worse at Catholic center than Shwe Than Lwin. Regarding the smoking behavior as bad oral care habit, Shwe Than Lwin center have bad oral habits than Catholic center.

There is minimal difference of alcohol drinking habits among respondents of Catholic and Shwe Than Lwin (20% vs 18.4%).

4.6 Assessing Clinical Oral Habit Status (remaining teeth or functional teeth (FT) or functional teeth units - FTUs) between two Home for Aged

In examining the respondents' options on clinical oral habit status, it measures based on the 0 is being "sound", 1 is "Caries", 2 is "Filled (restoration) with caries", 3 is " Filled with no caries", 4 is "missing due to caries", 5 is "missing due to any other reason, 6 is 'fissure sealant", 7 is being "fixed dental prothesis/ is Crown, Abutment, Veneer, Impatient", 8 is "unerupted", and 9 is "not recorded".

Table (4.4) Comparison of Dental Caries Status (DMF-T) between two Home for Aged (N = 126)

Dental Caries Status	Catholic Mean & (SD)	Shwe Than Lwin Mean & (SD)
Decayed Teeth (D-T)	2.34 (3.02)	2.22 (2.77)
Filled Teeth (F-T)	0.22 (1.15)	0.87 (2.84)
Missing Teeth (M-T)	15.52 (9.45)	12.55 (9.03)
Decayed Missing Filled Teeth (DMF-T)	18.08 (9.41)	15.64 (9.24)

Source: Survey Data, 2025

Table (4.4) shows the mean number of DMF-T was 18.08(±9.41) in Catholic Home for Aged and in Shwe Than Lwin is 15.64 (±9.24), which are relatively smaller in Table (4.4.). The large spread in the F-T values 0.22 for Catholic and 0.87 for Shwe Than Lwin Home for Aged describes the needs for further consideration into accessibility and affordability of dental care in Shwe Than Lwin.

Table (4.5) Comparison of Clinical Oral Health Status (FT, FTUs and DMF-T) between two Home for Aged

Clinical Oral Health Status	Catholic Mean (SD)	Shwe Than Lwin Mean (SD)
FT	17.46 (9.26)	21.91 (8.19)
FTU	16.12 (5.26)	8.66 (4.73)
DMF-T	18.08 (9.41)	15.64 (9.24)

FTU = Functional Teeth Unit, FT = Functional Teeth, DMF-T = Decayed Missing Filled Teeth

The mean FTU of Catholic is 16.12 (±5.26) and that of Shwe Than Lwin community is 8.66 (±4.73). The mean FT of Catholic Home for Aged is 17.46 (±9.26) and that of Shwe Than Lwin Home for Aged is 21.91 (±8.19).

The mean DMF-T of Catholic Home for Aged is 18.08 (±9.41) and that of Shwe Than Lwin Home for Aged is 15.64 (±9.24).

4.7 Impact of Clinical Oral Health Status and Oral Heath related Quality of Life

In the analysis of the impact of clinical oral health status on oral health related quality of life, multiple regression analysis is conducted. It finds whether positive or negative relationship between functional teeth (as the number of teeth actively contributing to chewing and oral function) and General Oral Health Assessment Index (GOHI), among Catholic elderly, Shwe Than Lwin elderly people, and total 126 participants from both community centers.

4.7.1 Relation between Total Functional Teeth (FT) and GOHAI of Catholic Home for Aged elderlies (n=50)

The analysis examines the relationship between total functional teeth (FT) and GOHAI at Catholic center, Shwe Than Lwin Center, and total 126 elderly from both centers.

(a) The Relation between total Functional Teeth (FT) and GOHAI at Catholic Home for Aged

In examining the relationship between total functional teeth and assessing different aspects of oral health, the result among 50 numbers of Catholic elderly by the result of regression analysis is shown below:

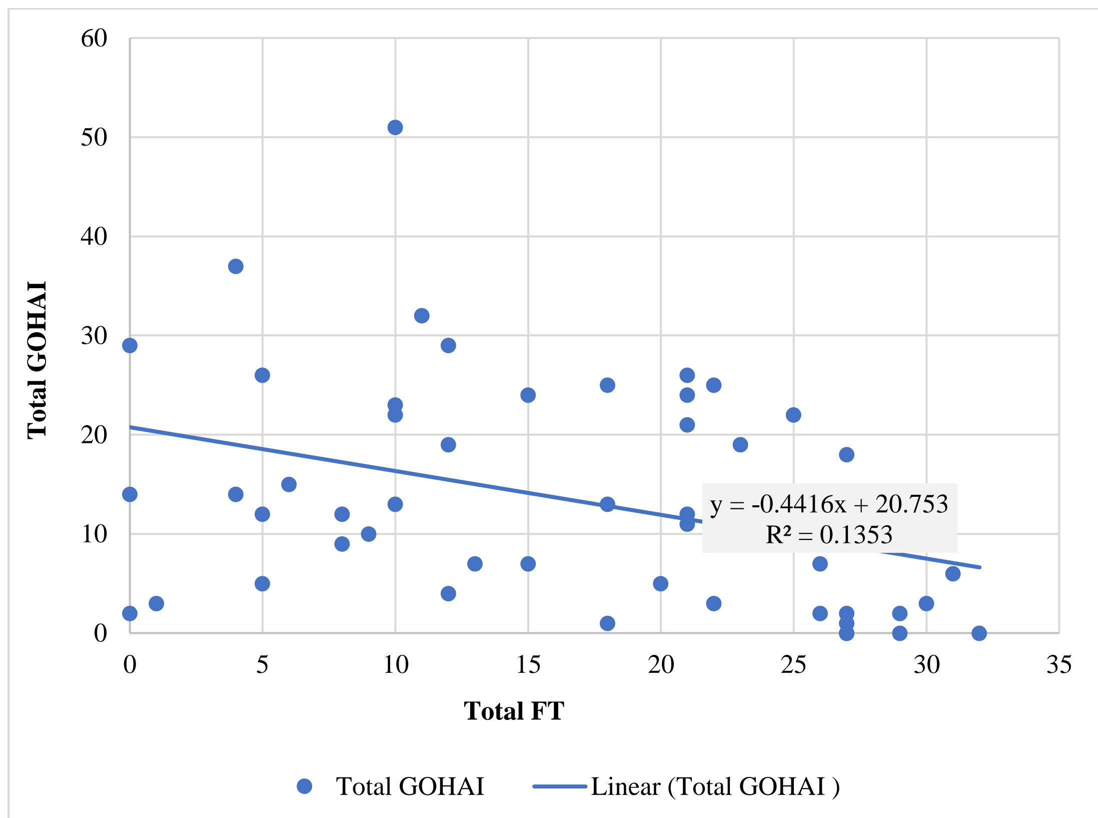
Table (4.6) Impact of Total Functional Teeth (FT) and GOHAI Scores of Elderly Respondents from Catholic Home for Aged (n=50)

	Pearson Correlation	Sig. (2-tailed)	N	Mean	Std. Deviation
Total GOHAI	1		50	13.52	11.37
Total FT	-0.368**	.009	50	16.38	9.47

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2025

Figure (4.1) Scattered Diagram Showing Relationship between Total FT and GOHAI Scores of Elderly Respondents from Catholic Home for Aged (n=50)



Source: Survey Data, 2025

By the Table (4.6.), the *p* value 0.009 is statistically significant with $p<0.01$. Figure (4.1.) shows that there is significant correlation between total functional teeth (FT) and GOHAI scores for Catholic institutionalized respondents.

It is found that there is moderate negative correlation between these two variables (Pearson correlation = -0.368, $p<0.01$). It indicates that as the number of

functional teeth increases, the GOHAI (Geriatric Oral Health Assessment Index) scores tend to decrease. Since GOHAI measures oral health-related quality of life, lower scores generally indicate better oral health and functioning. More specifically, GOHAI (Geriatric Oral Health Assessment Index) score 12 points means an individual is experiencing significant oral health-related challenges.

Elderly individuals at Catholic association with more functional teeth tend to experience better chewing ability and less difficulty (less challenges) in speaking and social interaction.

(b) The Relation between Total Functional Teeth (FT) and GOHAI (Shwe Than Lwin Home for Aged)

Further, it analyzes the impact of total functional teeth on GOHAI at Shwe Than Lwin Home for Aged.

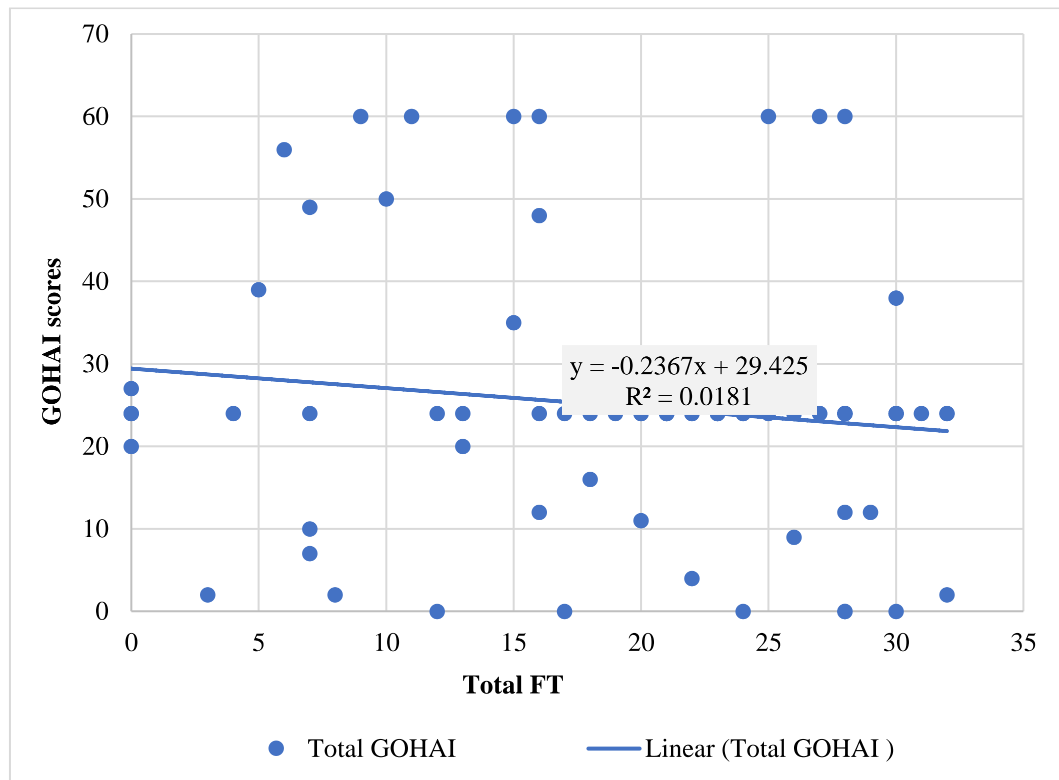
Table (4.7) Impact of Total Functional Teeth (FT) and GOHAI scores of Elderly Respondents from Shwe Than Lwin Home for Aged (n=76)

	Pearson Correlation	Sig. (2-tailed)	N	Mean	Std. Deviation
Total GOHAI	1		76	24.80	15.99
Total FT	-0.134	.247	76	19.53	9.08

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2025

Figure (4.2) Scattered Diagram Showing Relationship between Total FT and GOHAI Scores of Elderly Respondents from Shwe Than Lwin Home for Aged (n=76)



Source: Survey Data, 2025

According to **Table (4.7)**, Pearson correlation = -0.134, suggests that an increase in total functional teeth (FT) has a negative impact on GOHAI scores among elderly individuals at Shwe Than Lwin Home for Aged. (A negative coefficient value means that the functional teeth increase, lesser GOHAI scores or oral health challenges decrease.

Having more functional teeth is associated with better oral health experiences, whereas, the p-value is greater than 0.05 ($p<0.05$), this relationship is not statistically significant—meaning the effect of functional teeth on oral health-related quality of life (as measured by GOHAI) is relatively weak or inconsistent in this specific group.

(c) The Relation between total Functional Teeth (FT) and GOHAI of Elderly Respondents (N= 126)

In the examination of the total functional teeth effect on GOHAI scores among all total 126 participants from Catholic and Shwe Than Lwin elderly individuals, the findings are shown in Table (4.8), as follows:

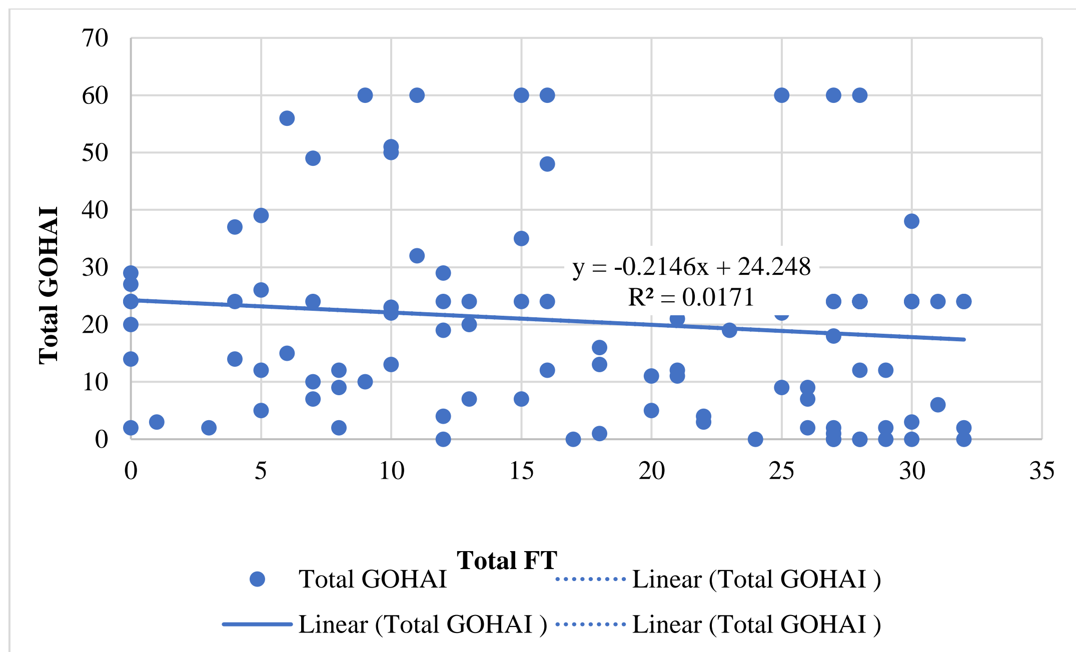
Table (4.8) Impact of Total Functional Teeth (FT) and GOHAI Scores of Elderly Respondents (N=126)

	Pearson Correlation	Sig. (2-tailed)	N	Mean	Std. Deviation
Total GOHAI			126	20.33	15.33
Total Functional Teeth	-0.131	.145	126	18.28	9.33

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2025

Figure (4.3) Scattered Diagram Showing Relationship between Total FT and GOHAI Scores of Elderly Respondents (N=126)



Source: Survey Data, 2025

According to Table (4.8), the Pearson Correlation of -0.131 suggests that an increase in total functional teeth (FT) has negative impact on GOHAI scores among

126 respondents for both Home for Aged. It is because of lower GOHAI scores indicates lesser oral health challenges, indicating better oral health-related quality of life.

Since the *p* value of 0.145, it is not statistically significant with $p<0.05$. It states that association between the total FT and GOHAI scores of Catholic and Shwe Than Lwin Home for Aged respondents do not show significant difference with P value greater than 0.05. The effect of functional teeth on oral health-related quality of life (as measured by GOHAI) is relatively weak or inconsistent in these elderly 126 people.

Although there is a connection between functional teeth and GOHAI scores, the lack of statistical significance means difficult to say that the number of functional teeth strongly affects oral health-related quality of life in all these elderly participants from two centers.

The result shows that there was the significant impact of clinical oral health status and oral health related quality of life (OHRQoL) among elderly especially at elderly at Catholic community than Shwe Than Lwin Community.

4.7.2 Relation between total Functional Teeth Units (FTUs) and GOHAI

The impact of total functional teeth unit on GOHAI oral health quality of life scores, regression analysis was conducted.

(a) The Relation between total Functional Teeth Units (FTUs) and GOHAI (Catholic Home for Aged)

In examining the impact of total functional teeth unit on GOHAI scores, 50 numbers of elderly from Catholic community were examined.

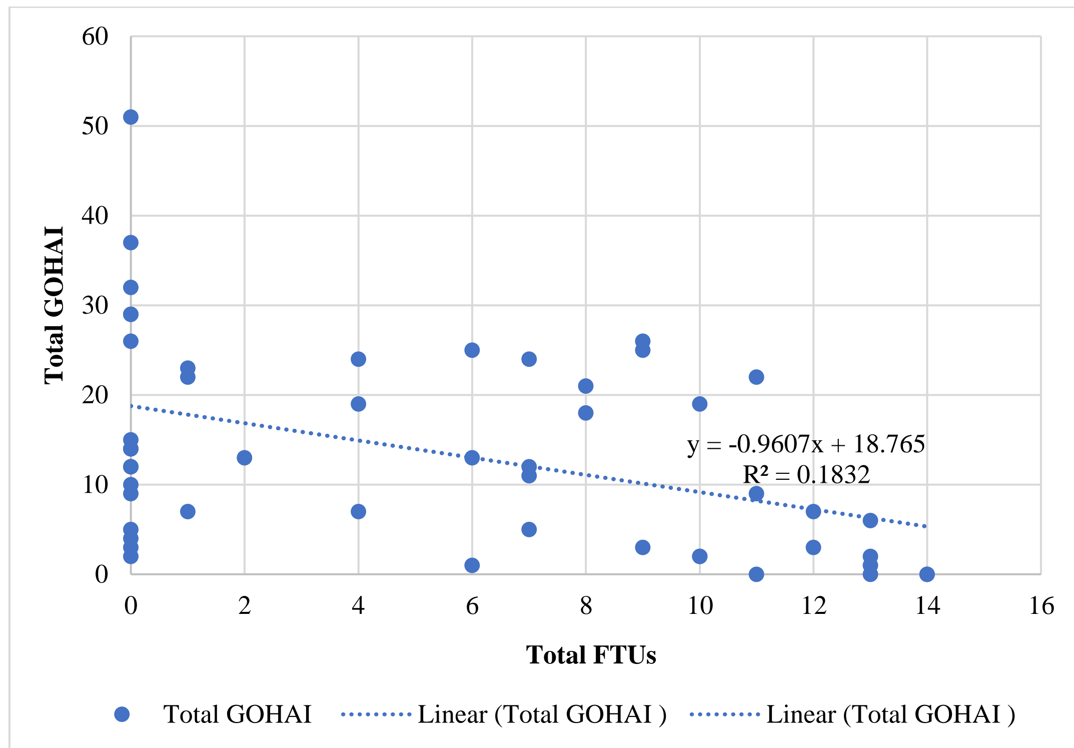
Table (4.9) Impact of Total Functional Teeth Units (FTUs) and GOHAI Scores of Elderly Respondents Catholic Home for Aged (n=50)

	Pearson Correlation	Sig. (2-tailed)	N	Mean	Std. Deviation
Total GOHAI	1		50	13.52	11.37
Total FTUs	-0.428^{**}	.002	50	5.46	5.07

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2025

Figure (4.4) Scattered Diagram Showing Relationship between Total FTUs and GOHAI Scores of Elderly Respondents from Catholic Home for Aged (n=50)



Source: Survey Data, 2025

According to Table (4.9), the Pearson Correlation of -0.428 is negative value. GOHAI scores are the measures the difficulty in oral health, an increase in total functional teeth unit is generally associated with lower GOHAI scores, meaning a better oral health-related quality of life among Catholic community elderly.

Since the *p* value of 0.002, it is statistically significant with $p<0.05$. It states that association between the total functional teeth unit and GOHAI scores of Catholic Home for Aged respondents show significant difference with *p* value less than 0.05. That is, the significant *p* value ($p < 0.05$) suggests that this effect is strong enough to be statistically. This means for an increase of functional tooth unit could be able to increase better oral health quality among Catholic elderly.

(b) The Relation between total Functional Teeth Units (FTUs) and GOHAI (Shwe Than Lwin Home for Aged)

The impact of the total functional teeth unit (FTU) on GOHAI among 76 elderly from Shwe Than Lwin Center is tested by the regression analysis.

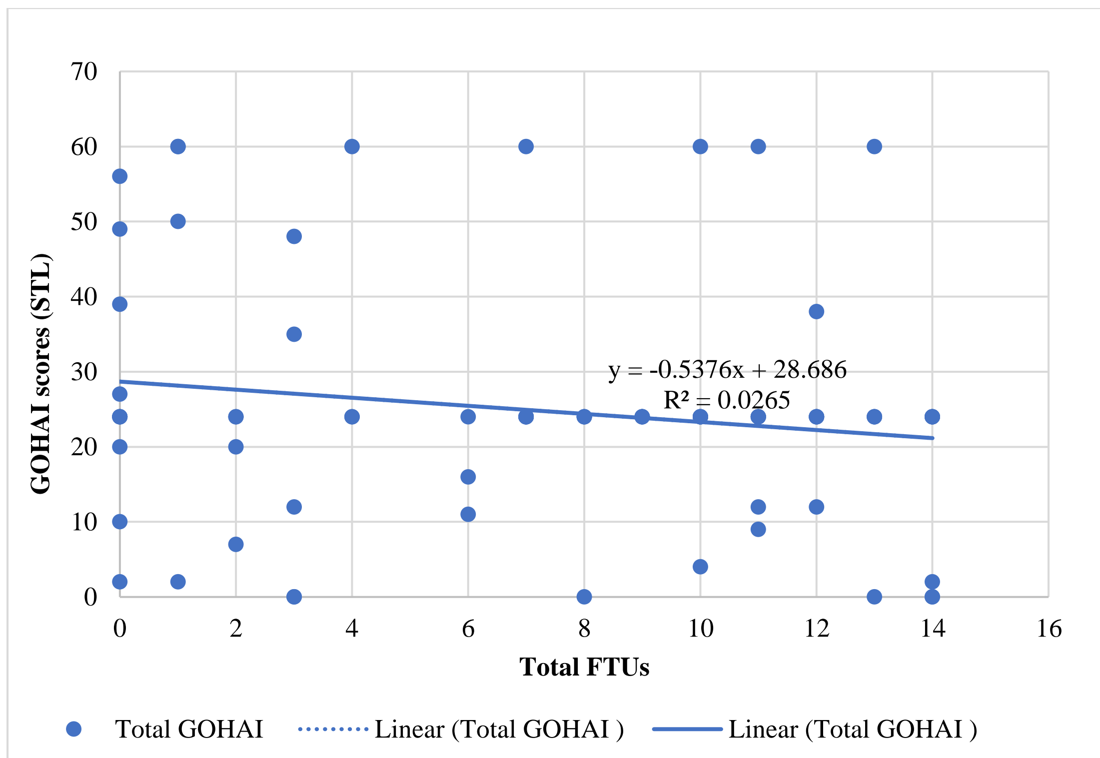
Table (4.10) Impact of Total FTUs on GOHAI Scores of Elderly Respondents from Shwe Than Lwin Home for Aged (n=76)

	Pearson Correlation	Sig. (2-tailed)	N	Mean	Std. Deviation
Total GOHAI	1		76	24.80	15.99
Total FTUs	-0.163	.160	76	7.22	4.84

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2025

Figure (4.5) Scattered Diagram Showing Relationship between Total FTUs and GOHAI Scores of Elderly Respondents from Shwe Than Lwin Home for Aged (n=76)



Source: Survey Data, 2025

According to **Table (4.10)**, the Pearson Correlation of -0.163 is negative value. This indicates an increase in total functional teeth unit is generally associated with lower GOHAI scores, meaning a better oral health-related quality of life among Shwe Than Lwin Home for Aged elderly.

Since the *p* value of 0.160, it is not statistically significant with p>0.05. It states that association between the total functional teeth unit and GOHAI scores of Shwe Than Lwin Home for Aged respondents does not show significant difference with *p* value greater than 0.05. That is, the insignificant *p*-value ($p > 0.05$) suggests that the more total functional teeth unit effect is difficult to say for additional oral healthcare among Shwe Than Lwin elderly statistically.

(c) The Relation between total Functional Teeth Units (FTUs) and GOHAI scores of Elderly respondents (N= 126)

For a more understanding about the relationship among total elderly, the regression analysis was further conducted for total 126 participants. Table 4.11 illustrates the statistical result of the analysis of the impact of total functional teeth unit and GOHI oral healthcare score, as follows:

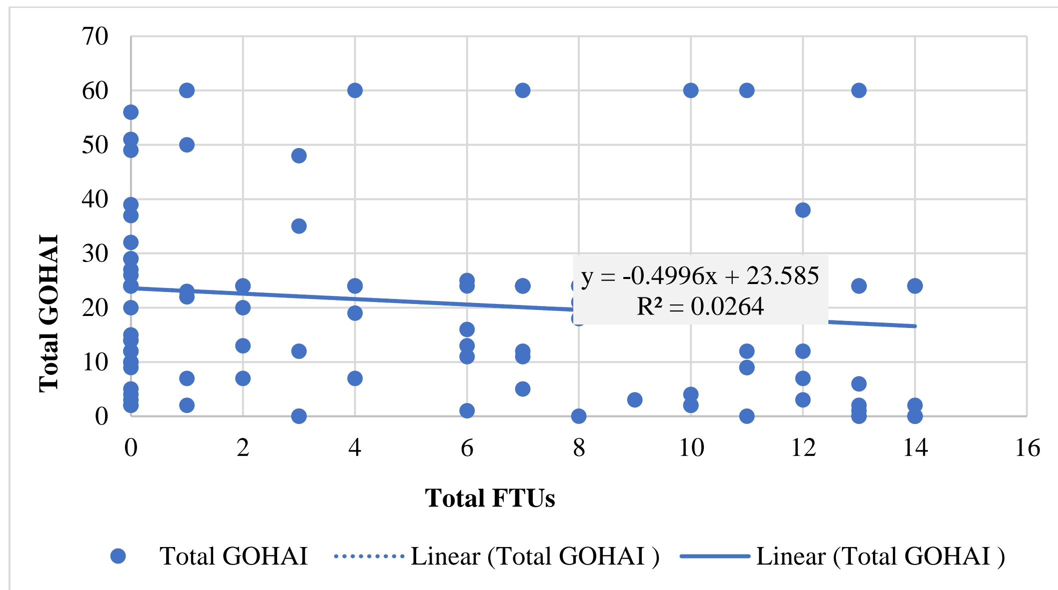
Table (4.11) Impact of Total FTUs and GOHAI Scores of Elderly respondents (N=126)

	Pearson Correlation	Sig. (2-tailed)	N	Mean	Std. Deviation
Total GOHAI	1		126	20.33	15.33
Total FTUs	-.163	.069	126	6.52	4.99

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Survey Data, 2025

Figure (4.6) Scattered Diagram Showing Relationship between Total FTUs and GOHAI Scores of Elderly respondents (N=126)



Source: Survey Data, 2025

According to **Table (4.11)**, the Pearson Correlation of -0.163 is negative value. This indicates an increase in total functional teeth unit is generally associated with lower GOHAI scores, meaning a better oral health-related quality of life of elderly from both Catholic and Shwe Than Lwin community elderly by its effect of good negative correlation. Figure 4.6 presents the scattered diagram between total FTU and GOHAI scores.

Since the *p* value of 0.069, it was statistically significant value with $p<0.10$. It stated that association between the total functional teeth unit and GOHAI scores of the total 126 institutionalized participants show significant difference with *p* value lesser than 0.10. That is, the insignificant *p*-value ($p < 0.10$) suggests that there is the negative impact on GOHAL score for better oral healthcare among both Catholic and Shwe Than Lwin elderly, statistically. That is, if one unit increase of total functional teeth unit could reduce oral healthcare problems by lowering GOHAI scores (Pearson correlation = -0.163, $p<0.10$).

The result shows that there was the significant impact of clinical oral health status and oral health related quality of life (OHRQoL) among elderly.

4.7.3 Comparative analysis between Two Home for Aged

Table (4.12) Comparison of Clinical Oral Health Status (FT and FTUs) and GOHAI between Two Home for Aged

Clinical Oral Health Status	Catholic Mean (SD)	Shwe Than Lwin Mean (SD)
FT	17.46 (9.26)	21.91 (8.19)
FTUs	16.12 (5.26)	8.66 (4.73)
GOHAI	13.52 (11.37)	24.80 (15.99)

According to **Table (4.12),** FT, FTUs and GOHAI scores in Catholic Home for Aged, mean FT is 17.46 (9.26), mean FTUs is 16.12 (5.26), mean GOHAI is 13.52 (11.37) and in Shwe Than Lwin Home for Aged, mean FT is 21.91 (8.19), mean FTUs is 8.66 (4.73), mean GOHAI is 24.80 (15.99). Since the mean FT and FTUs in Catholic Home for Aged are higher than that of Shwe Than Lwin Home for Aged and mean GOHAI scores in Catholic Home for Aged is lower than that of Shwe Than Lwin Home for Aged, this indicates increased in FT and FTUs is generally associated with lower GOHAI scores, meaning a better oral health-related quality of life among Catholic Home for Aged.

CHAPTER V
CONCLUSION AND RECOMMENDATION

5.1 Findings

This cross-sectional analytical study examines the relationship between dental functional teeth units and oral health-related quality of life (OHRQoL) in 126 elderly Yangon Region residents in Catholic (Mingalar Taung Nyunt) and Shwe Than Lwin (Dagon Seikkan) in February 2025. The sampling region was chosen from institutionalized sections of Mingalar Taung Nyunt and Dagon Seikkan townships. Structured questionnaires were used for face-to-face interviews. Catholic Home for Aged and Shwe Than Lwin Home for Aged are two habitation statuses.

The age distribution of study population ranged from 65 years old (minimum age) to above 86 years old (maximum age) in the present study. The mean age of Catholic Home for Aged was 77.92(±7.60) years old and Shwe Than Lwin Home for Aged was also 75.99(±6.44) years old. So, Catholic Home for Aged had higher mean age than Shwe Than Lwin Home for Aged.

Ethnic groups of total study populations were 75 Bamar (60%), 20 others (15%) and 31 national races (25%).

Among the total population of study, there were 8 (16%) of Catholic Home for Aged and 1 (1.31%) of Shwe Than Lwin Home for Aged illiterate elderly that means no formal schooling. Among Degree or Post-graduate Degree Holder, some of the elderly of Catholic Home for Aged was 2(4%) and Shwe Than Lwin Home for Aged was 5 (6.6%).

Catholic Home for Aged had 10 (20%) unskilled workers and it was 15 (19.74%) of Shwe Than Lwin Home for Aged. According to the findings, the occupational status showed that the government servant (31.80% of all participants) were the largest group and the second largest group were unskilled workers (19.80% of all participants) and the least group were farmers (only 6% of all participants). Only 17 professional elderly populations were present in Home for Aged. From the

finding, that most of the elderly from Home for Aged were the retired government staff.

The present study reported that 118 (94%) participants brushed their teeth and 8 (6%) did not brush because they were lack of tooth brushing habits. The elderly who did not take tooth brushing were the illiterate and they also had lack of oral health knowledge, so we would be planned to give the proper and effective oral health education program among the elderly. Relating to the tooth brushing material, two third of total population (89% of total samples) reported that they used tooth brush with tooth paste, 5% used alternative to toothpaste such as ash, salt and 5% did not do the tooth brushing and did not use any tooth brush and tooth brushing material.

In tooth brushing methods, they also reported as 60 (48% of total population) used the horizontal method of tooth brushing, 29% of total population used the both of horizontal and vertical method and the rest 17% used the vertical method in this study. Regarding the frequency of tooth brushing, half of the total sample 69 elderly (55%) reported that they took twice a day tooth brushing habit and 31% took once a day and 8% took more than twice a day.

Regarding oral habits, it was reported that 45 elderly (36% of the total study population) were taking oral habit of smoking, betel quid chewing, and other type of using tobacco in this study. The elderly without the oral habit also included 32(64%) from Catholic Home for Aged and 49(64.47%) from Shwe Than Lwin Home for Aged. The elderly of Shwe Than Lwin with presence of the bad oral habit were higher than that of Catholic Home for Aged so it meant that Shwe Than Lwin Home for Aged was worse oral health status than Catholic.

Regarding the betel quid chewing habit, it was reported that 16(32%) from Catholic Home for Aged and 23(30.26%) from Shwe Than Lwin Home for Aged were present betel quid chewing habit. The present study also described as the betel quid chewing habit of Shwe Than Lwin Home for Aged was more than that of Catholic Home for Aged.

Regarding the smoking habit, 7 elderly (16%) of Catholic Home for Aged and 15 elderly (19.74%) of Shwe Than Lwin Home for Aged had smoking habit. In this study, the smoking habit of Shwe Than Lwin Home for Aged was higher than that of Catholic Home for Aged.

The elderly with alcohol drinking habit included 10(20%) from Catholic Home for Aged and 14(18.42%) from Shwe Than Lwin Home for Aged. It also

described as the alcohol drinking habit of Shwe Than Lwin Home for Aged was higher than that of Catholic Home for Aged.

Regarding the oral habit behavior, Catholic Home for Aged was better oral health status than Shwe Than Lwin Home for Aged.

In this study, there was no significant relationship in dental caries status of mean number of DT (decayed teeth), MT (missing teeth) and FT (filled teeth) and DMF-T (decayed, missing, filled teeth) of the study population by dwelling status. And mean number of DMF-T was 18.08(SD = 9.41) in Shwe Than Lwin Home for Aged and in Catholic Home for Aged was 15.64(SD = 9.24), which were relatively smaller. The large spread in the F-T values 0.22 for Catholic and 0.87 for Shwe Than Lwin community describes the needs for further consideration into accessibility and affordability of dental caries in Shwe Than Lwin Home for Aged.

The mean FTU of Catholic Home for Aged was 6.12 (S.D=5.26) and Shwe Than Lwin Home for Aged was 8.66 (S.D=4.73). Mean FT of Catholic Home for Aged was 17.46 (S.D=9.26) and Shwe Than Lwin Home for Aged was 21.91 (S.D=8.19). In this study, there was no statistically significant relationship between function teeth unit (FTUs) and total decayed, missing and filled teeth (DMF-T) by dwelling status.

Regarding GOHAI scores in Catholic Home for Aged, mean GOHAI is 13.52 (SD = 11.37) and in Shwe Than Lwin Home for Aged, mean GOHAI is 24.8 (SD = 15.99). The mean GOHAI of Catholic Home for Aged is lower than that of the Shwe Than Lwin Home for Aged, so it mean that elderly respondents from Catholic Home for Aged has better oral health-related quality of life than that of Shwe Than Lwin Home for Aged.

Regarding FT and FTUs on GOHAI scores in Catholic Home for Aged, mean FT is 17.46 (SD = 9.26), mean FTUs is 16.12 (SD = 5.26) and in Shwe Than Lwin Home for Aged, mean FT is 21.91 (SD = 8.19), mean FTUs is 8.66(SD = 4.73). Since the mean FT and FTUs in Catholic Home for Aged are higher than that of Shwe Than Lwin Home for Aged, this indicates increased in FT and FTUs is generally associated with lower GOHAI scores, meaning a better oral health-related quality of life among Catholic Home for Aged.

The current health service system in Myanmar reveals that dental services are largely unavailable in most station hospitals within village tracts and rural health

centers. This deficiency is attributed to a low dentist-to-population ratio, which was 1:38,800 in 2005, compared to the WHO standard of 1:20,000 for an adequate dentist-to-population ratio. The deficiency of human resources, including dental health nurses and hygienists, impedes the provision of basic treatments, health education, and promotional activities on a monthly or annual basis, particularly for mobile dental health teams serving elderly individuals unable to access dental units due to poor health conditions. There were extremely few oral cancer screening programs in rural regions with a high prevalence of betel quid consumption compared to metropolitan areas. Among the respondents who did not use dental health services in 2014, the stated reasons were "absence of signs and symptoms," "high treatment costs," "dental anxiety," and "poor overall health." The explanations mirrored those found in the Nigerian study, which indicated that respondents sought dental consultation solely in the presence of pain, while significant hurdles to utilizing dental services were dental anxiety and high treatment costs.

5.2 Suggestions

Based on the survey findings on impact of clinical oral health status and oral health related quality of life (OHRQoL) among elderly, the following recommendations and suggestions could be made. In comparing the socio-demographic information between two aged-care centers, the study conducted age analysis, gender analysis, ethnic, occupation, and educational year. In this study, it includes elderly people aged 65 years and above from two Home for Aged Catholic (Mingalar Taung Nyunt) and Shwe Than Lwin (Dagon Seikkan) from Yangon Region. By the ethnic analysis, these Home for Aged are found as no discriminations among different ethnic groups. Being the greater number of females, it could be found that females are more relying on Home for Aged than male people. Based on the analysis of occupation and years of education, it can be observed that government employees tend to rely more on Home for Aged. However, reliance on Home for Aged does not apply uniformly across all levels of education or occupational status. It could be seemed that lesser financial security and independence later in the life, increasing their need to depend on these community centers.

Regarding the oral hygiene behavior, almost all are found as using tooth brushing and toothpaste at least once in a day. Since a greater number at Shwe Than Lwin brush their teeth twice than Catholic, it could be recommended that elderly at

Shwe Than Lwin have more oral hygiene behavior than Catholic people. The study recommends that elderly people have good oral health practice by the use of toothpaste and other alternative materials for oral hygiene. Based on the analysis result of tooth brushing method - horizontal and a combination of horizontal and vertical method, it can be suggested that an individual's brushing techniques may be influenced by the condition of their functional teeth units.

Regarding the oral health behavior of the study, it examined the bad oral health behavior among elderly by means of smoking, betel quid chewing and alcohol drinking. The study found that most of elderly from both Home for Aged commonly have bad oral habit. By the finding of unhealthy oral habits such as smoking, betel quid chewing, and alcohol consumption, it could be suggested to increase targeted awareness programs and preventive dental care initiatives that could help promote better oral health conditions. By comparing elderly respondents from two Home for Aged, it could be suggested that there is the need to promote smoking prevention efforts at Shwe Than Lwin Home for Aged.

In the assessment of clinical oral health status by means of decayed teeth, filled-teeth, missing teeth, and decayed missing filled-teeth, the study finds that Catholic Home for Aged has a higher mean DMF-T (18.08 ± 9.41) compared to Shwe Than Lwin Home for Aged (15.64 ± 9.24), suggesting a greater need for early dental interventions in Catholic Home for Aged. And arrange regular dental check-ups (at least biannually) with mobile dental services if access is limited. Recommend prioritizing restorative treatments for active caries to prevent pain and infections and train caregivers on proper oral hygiene techniques for elderly with dentures or natural teeth. It could be suggested to implement routing dental visits among these two Home for Aged for better encouragement of oral hygiene habits.

In the analysis of functional teeth, functional teeth unit, or decayed missing filled teeth by comparing two Home for Aged, the study finds that Catholic Home for Aged has fewer functional teeth (FT) than that of Shwe Than Lwin Home for Aged suggesting greater need for oral hygiene care and implement a regular dental check-up schedule, with at least biannual visits to monitor and treat dental issues early. Recommend prioritizing prosthetic rehabilitation for Shwe Than Lwin Home for Aged by providing partial dentures or bridges, especially for elderlies who missing posterior teeth, to restore proper chewing function. Since elderlies from Shwe Than

Lwin Home for Aged have more natural teeth remaining, preventive care is crucial, this includes regular dental check-ups to preserve existing teeth and the staff should be trained to assist residents with daily brushing and flossing, particularly for those with dexterity challenges.

Regression analysis was used to examine the influence of clinical oral health status on oral health-related quality of life, specifically the association between functional teeth unit and GOHAI score. The study demonstrates a strong negative link between functional teeth and GOHAI score among Catholic seniors. This suggests that more functioning teeth lower GOHAI (Geriatric Oral Health Assessment Index) ratings and oral health issues.

But for the Shwe Than Lwin elderly, although there is negative relationship between total functional teeth and GOHAI scores, it suggests that the number of functional teeth does not strongly affects oral health-related quality of life among elderly respondents in that Home for Aged. The weaker correlation between functional teeth and GOHAI scores at Shwe Than Lwin suggests that factors such as pain management, denture use, or previous dental experiences may influence oral health-related quality of life.

By the result of the analysis on all 126 elderly, it is also negative relationship whereas the effect is not strongly impact on oral health-related quality of life among elderly, since it is difficult to say to increase total functional teeth among all 126 people. It is recommended that to enhance preventive dental care are necessary.

Furthermore, the result of the analysis of the impact of total functional teeth unit on oral health-related quality of life across the two Home for Aged reveals a significant effect. Based on those findings, it is strongly recommended that targeted oral health interventions should be implemented to enhance the quality of life of elderly respondents in both Home for Aged.

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APPENDICES

INFORMED CONSENT FORM (ENGLISH VERSION)

(APPENDIX-I)

Informed Consent

Dear Sir / Madam, ID | | | |

We are conducting the survey to study the oral health status including number of dental functional units, treatment need and oral health-related quality of life among the Institutionalized Elderly in Yangon Region. So would you please answer the following oral health questionnaire as much complete and thorough as possible.

This is not a test and there is no right or wrong answer. Please think and fill as truly and freely as in your mind. All of the data collected in this study will be strictly treated as confidential. The present study may give some useful results and helpful effect to plan for future geriatric oral health care program in our country.

Thank you very much for your participation.

Signature---------------------------------	**Dr. Thein Tun OO**
Name--------------------------------------	**EMPA II-087**
Address------------------------------------	**Yangon University of Economics**
(Participant)	**(Researcher)**

Dated**:** ---------/----------/-------------

WHO Oral Health Assessment Form for Elderly (Modified)

(APPENDIX-II)

Identification Number ☐☐☐

Year ☐☐ Month ☐☐ Day ☐☐

Original / Duplicate ☐

General Information

(Name) -----------------------------------

Sex 1=M, 2=F ☐

Date of birth ☐☐☐☐☐☐

Age in years ☐☐

Years in school ☐☐

Ethinc group ☐

Community (geographcial location) ☐

Occupation ☐

Location Urban (1) Rural (2) ☐

Home for Aged ☐

Dentition Status, Functional Teeth and Functional Teeth Unit

	18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
Crown																
Functional teeth																

Functional teeth unit	17	16	15	14	13	12	11	21	22	23	24	25	26	27
	47	46	45	44	43	42	41	31	32	33	34	35	36	37

	48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
Functional teeth																
Crown																

Functional Teeth

0 = Natural teeth
1 = Abutment teeth
2 = Pontic
3 = Crown
4 = Implant
5 = Removable Denture
6= Missing teeth

Functional Teeth Unit

0 = No Functional Unit
1 = Natural Teeth /Normal Teeth
2 = Natural Teeth/Removable Prothesis
3 = Natural Teeth/Fixed Prothesis
4= Removable Prothesis/Natural Teeth
5 = Fixed Prothesis/Natural Teeth
6 = Prothesis/ Prothesis

Permanent Teeth Status

0 = Sound
1 = Caries
2 = Filled with caries
3 = Filled, no caries
4 = Missing due to caries
5 = Missing for any another reason
6 = Fissure sealant
7 = Fixed dental prothesis/crown, abutment, veneer, implant
8 = Unerupted
9 = Not recorded

Dentures (s)

Upper ☐ Lower ☐

Status

0 = No denture
1 = Partial denture
2 = Complete denture
9 = Not recorded

Tooth brushing ☐ 0=No 1=Yes

Frequency ☐

Material ☐ 1=Tooth paste 2=Others

Method ☐ 1=Vertical 2=Horizontal 3=Both V+H

Oral habit ☐ 0=No 1=Yes

Smoking ☐

Betel quid chewing ☐

Alcohol drinking ☐

Geriatric Oral Health Assessment Index (GOHAI)

(English Version) **ID** | | | |

(Appendix - III)

(Please tick (✓) only one which best described for your answer) (Within last 1 year)

		never	seldom	some time	often	very often	always
1.	How often did you limit the kinds or amounts of food you eat because of problem with your teeth or dentures?						
2.	How often did you have trouble biting or chewing and kinds of food, such as firm meat or apples?						
3.	How often were you able to swallow comfortably?						
4.	How often have your teeth or denture prevented you from speaking the way you wanted?						
5.	How often were you able to eat anything without feeling discomfort?						
6.	How often did you limit contacts with people because of the condition of your teeth or dentures?						
7.	How often were you pleased or happy with the looks of your teeth and gums or dentures?						
8.	How often did you use medication to relieve pain or discomfort from around your mouth?						
9.	How often were you worried or concerned about the problems with your teeth, gums or dentures?						
10.	How often did you feel nervous or self-conscious because of problems with your teeth, gums or dentures?						
11.	How often did you feel uncomfortable eating in front of people because of problems with you teeth or dentures?						
12.	How often were your teeth or gums sensitive to hot, cold or sweets?						